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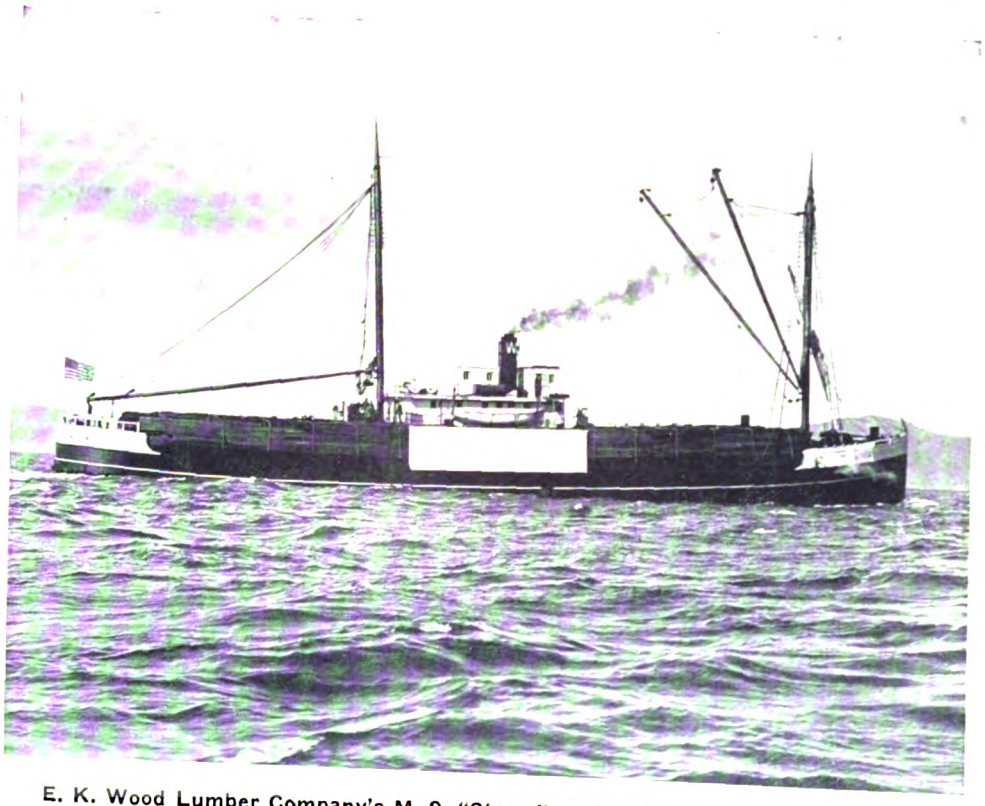

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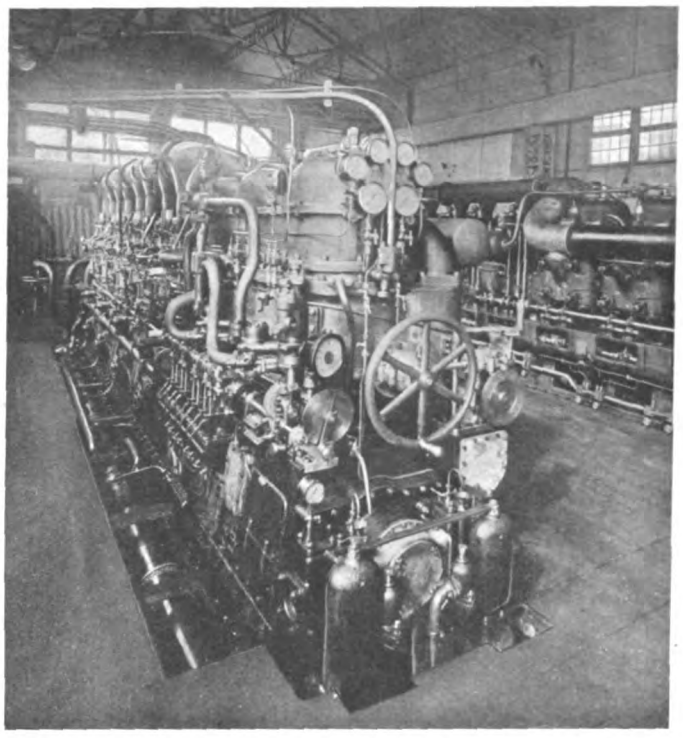

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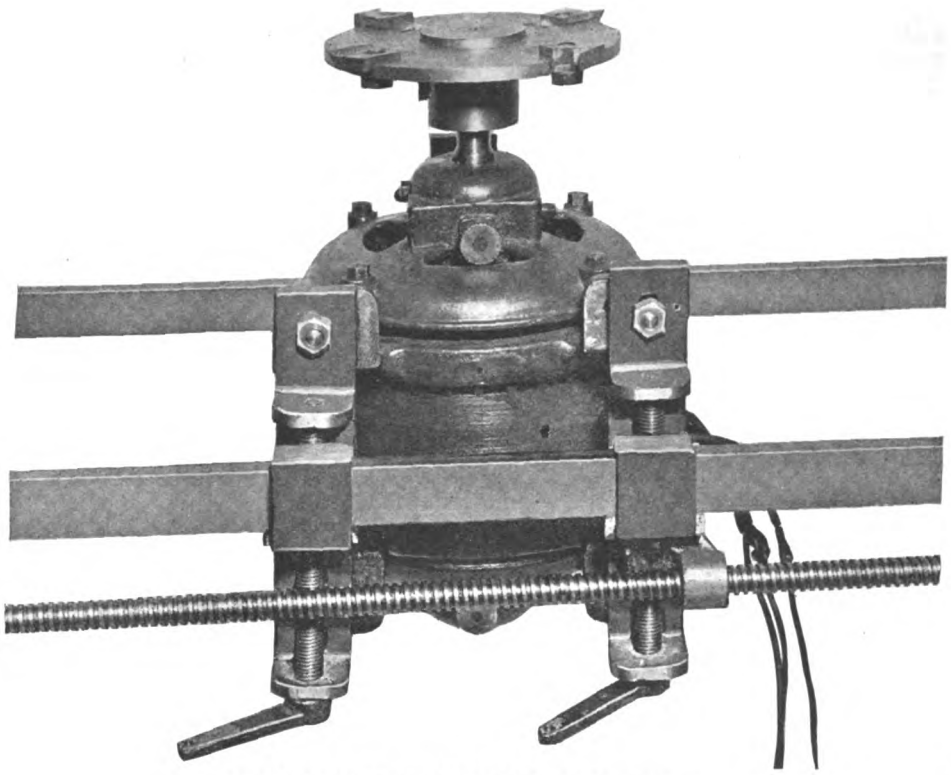

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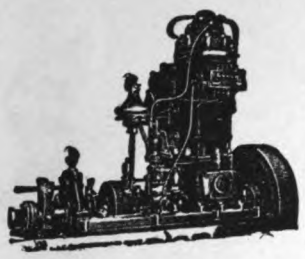
Crude Oil Engines



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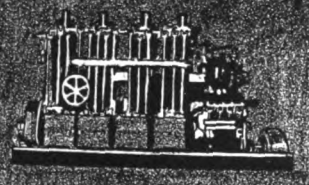

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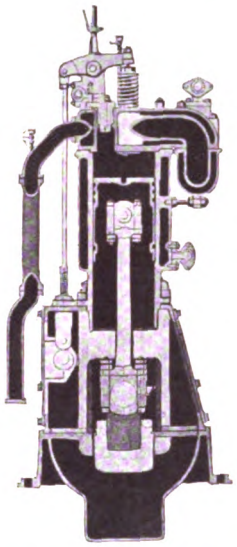

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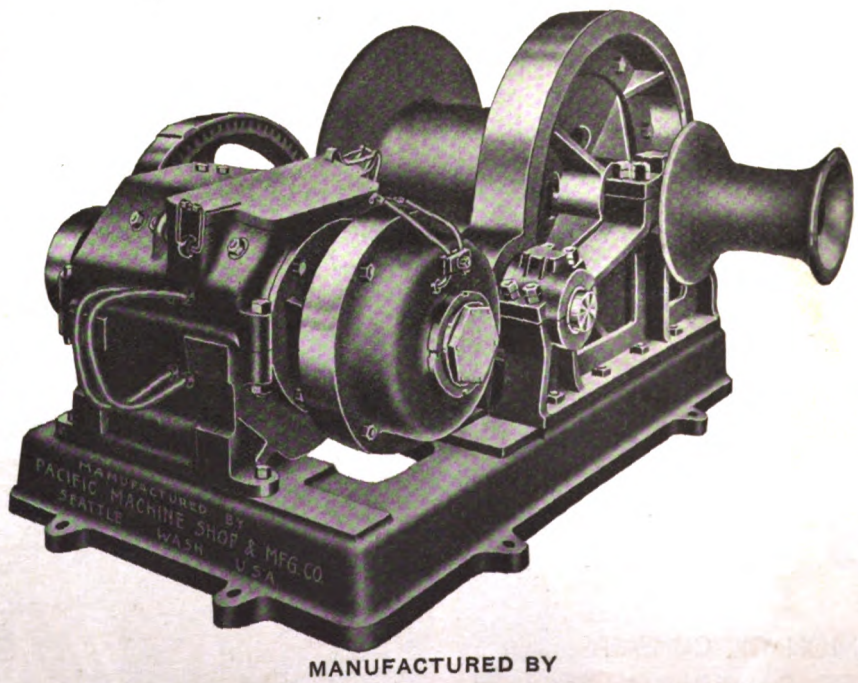

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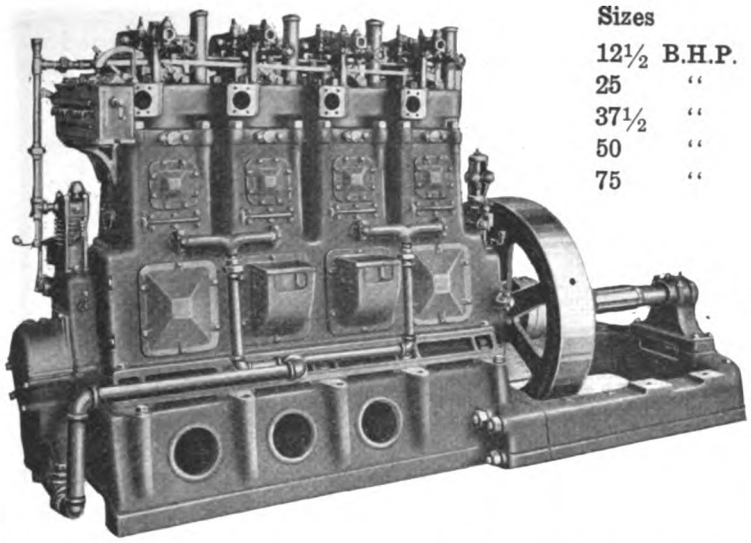

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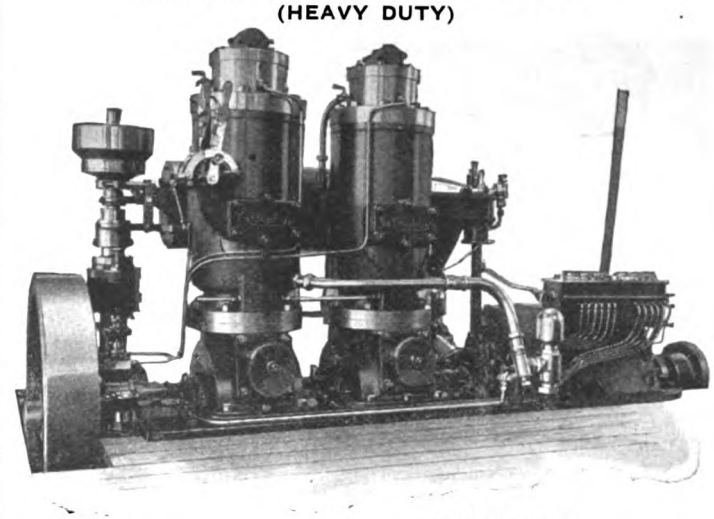

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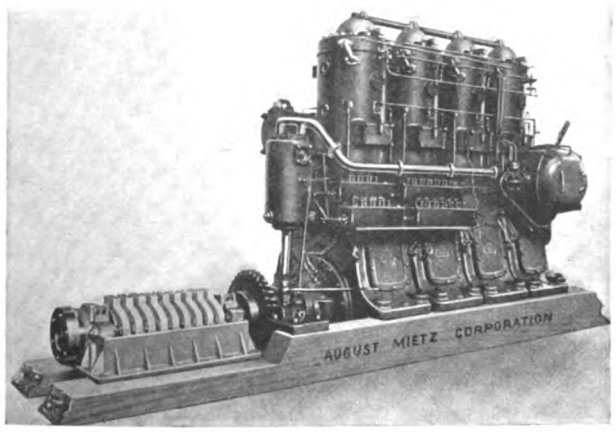

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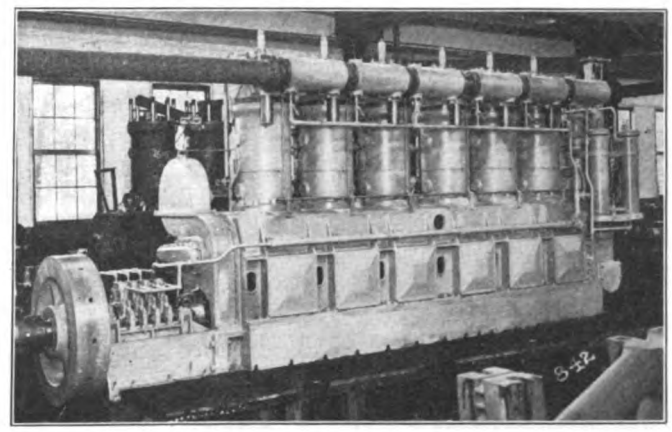

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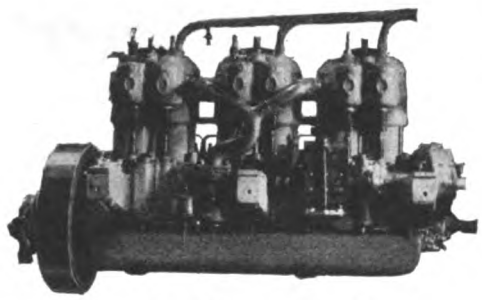

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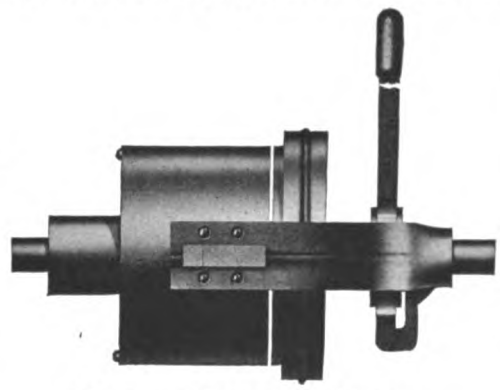

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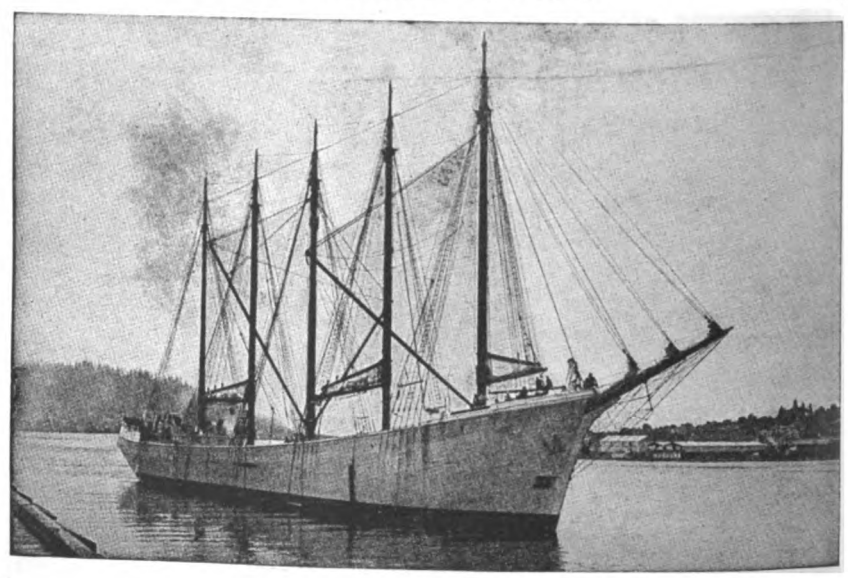

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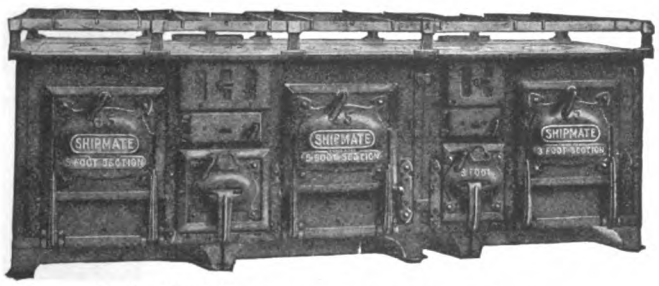

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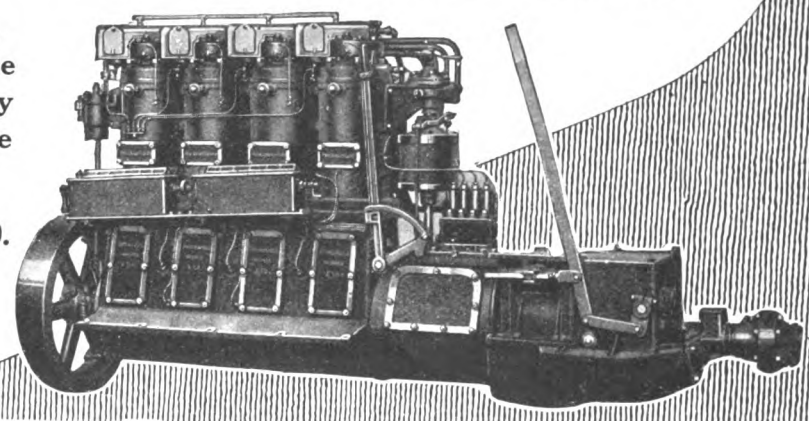

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GAS POWER, by C. T. Hirshfeld, M. M. E., Cornell University Professor; T. C. Ulbricht, M. M. E., formerly Cornell University Professor, 1914. Price $1.25 net. A simplified treatise on gas, gasoline and oil engines of the stationary type including chapter on gas producers.

GAS, GASOLINE AND OIL ENGINES, by Gardner E. Hiscox, M. E. Revised, enlarged and modernized by Victor Page, M. E., 1915. Price $2.50 net. A complete work of 631 pages with 435 engravings covering stationary, marine, motor vehicles and aerial, including Producer Gas.

OIL FUEL, by Edward Butler, M. I. M. E., 1914. Price $1.80 net. Third edition enlarged, 318 pages, 150 illustrations. A scientific text book on the supply, composition and application of fuel oil.

LAND AND MARINE DIESEL ENGINES, by Giorgio Supino, 1915. Price $3.00 net. Exhaustive treatise with data and plans covering modern Diesels, including rules governing classification societies for the classification of Diesel engines. 19 plates, 380 illustrations.

OIL MOTORS, by C. Lieckfeld, Civil Engineer, 1908. 266 pages with 306 illustrations. Price $3.60 net. A hand-book for engineers and all interested in engines using liquid fuel, explaining development, construction and management.

THE SUBMARINE TORPEDO BOAT, by Allen Hoar, 1916. Price $2.00 net. An authoritative general treatise beautifully illustrated of interest to the layman apart from its technical value.

RADIODYNAMICS (1916), by B. F. Miessner. Price $2.00 net. Explaining the wireless control of torpedoes and other mechanisms. 112 illustrations.

GAS OIL AND AIR ENGINES, by Bryan Donkin, 1911, fifth edition. Price $6.00 net. A text book of 627 pages compiled by an eminent engineer, with revisions by Prof. Burstall and T. Graves Smith, M. I. Mech. E.

PETROL MOTORS SIMPLY EXPLAINED, by T. H. Hawley. Price 25c net. A small handbook covering Petrol engines of English manufacture.

PRACTICAL HAND BOOK, GAS, OIL AND STEAM ENGINES, by John B. Rathbun, 1916. Price, flexible leather, $1.50; silk cloth $1.00. A comprehensive book on construction, operation and repair.

DIESEL ENGINES MARINE AND STATIONARY, 1915, by A. H. Goldingham, M. I. M. E. Price $3.00 net. Practically all makes of Diesel engines dealt with in detail and fully illustrated with plans and photographs.

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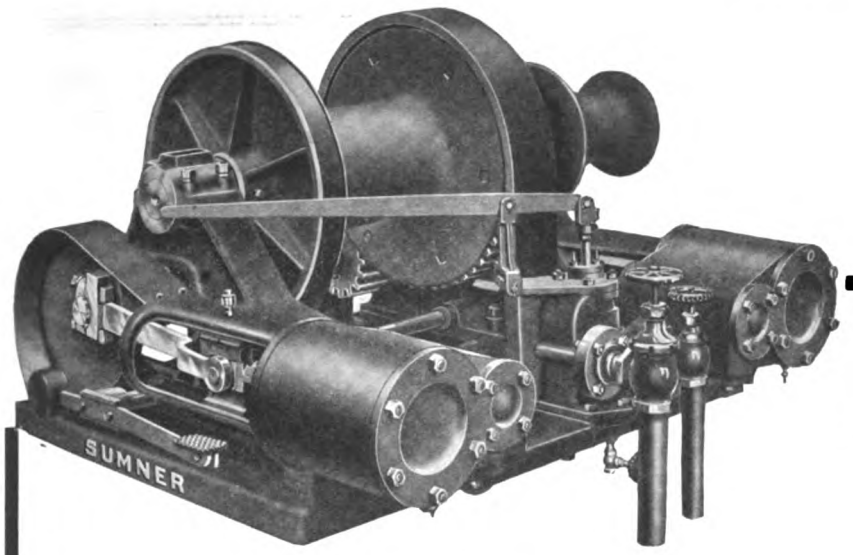

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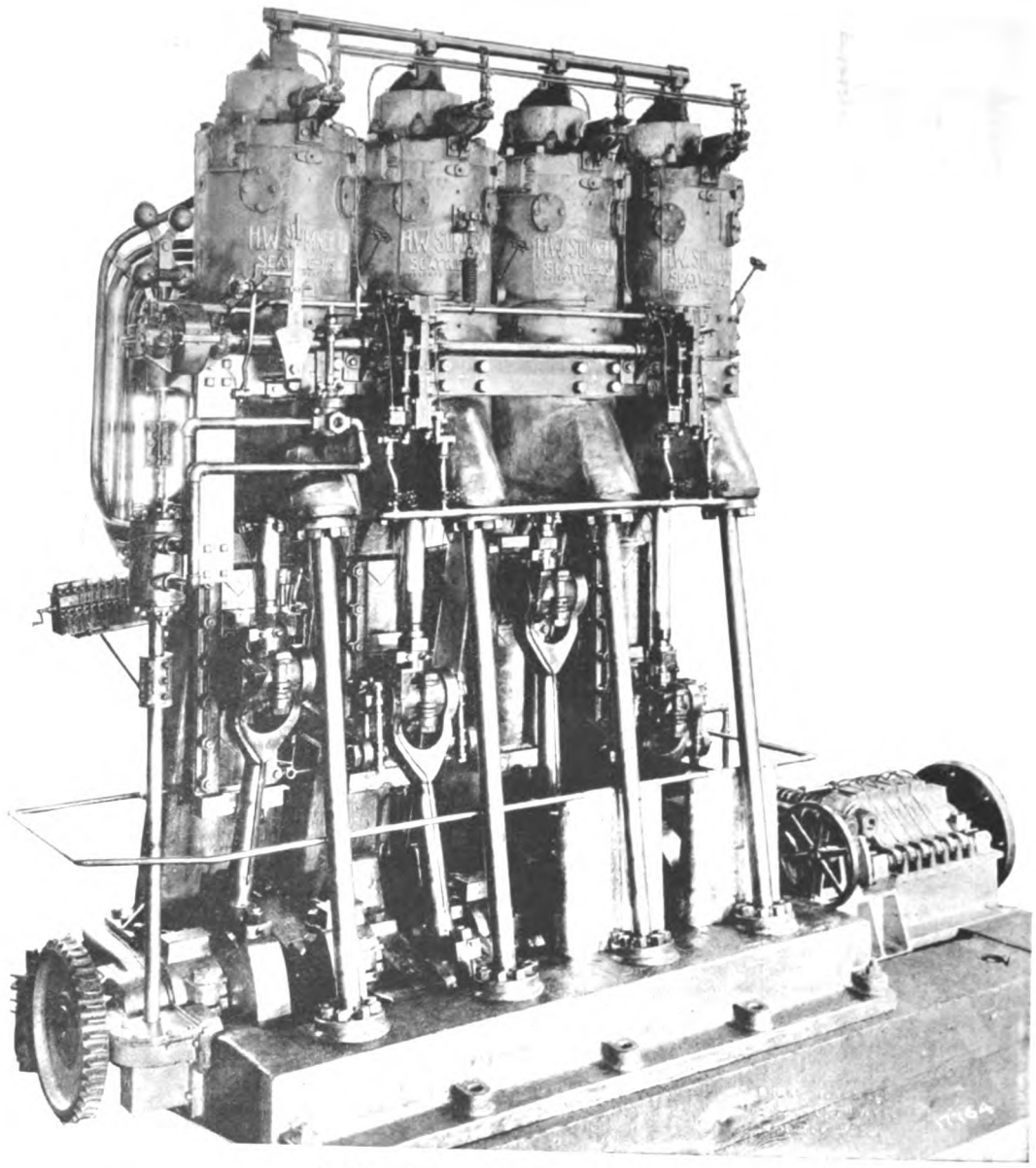

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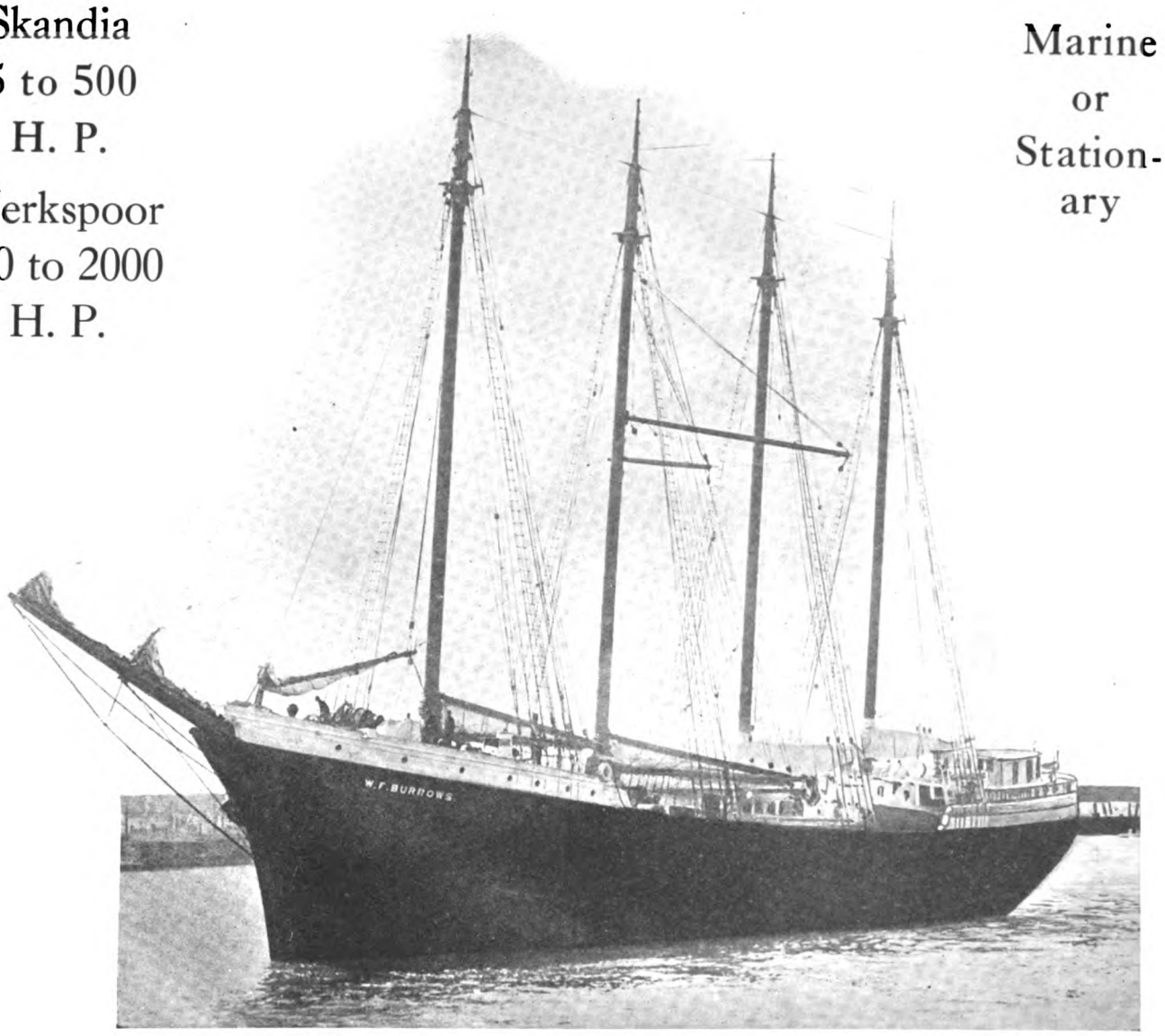

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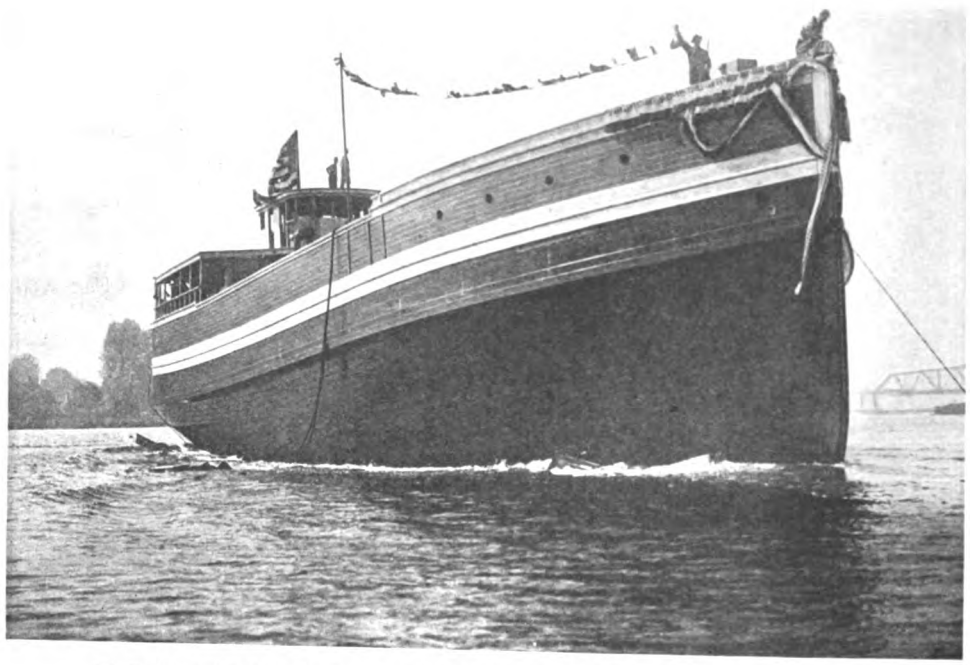

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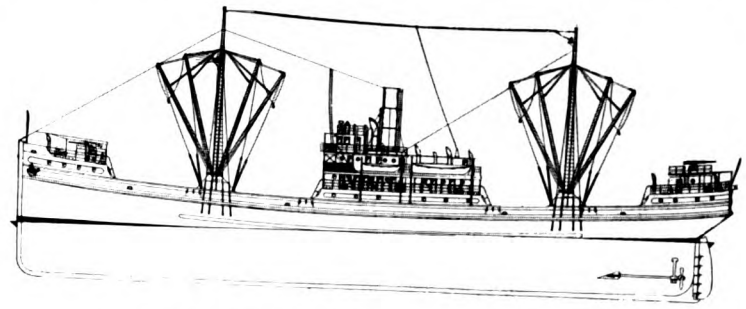

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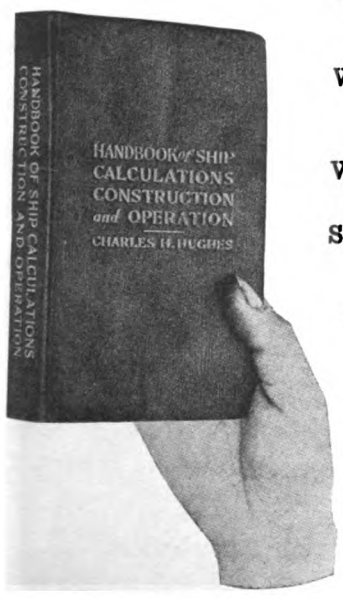

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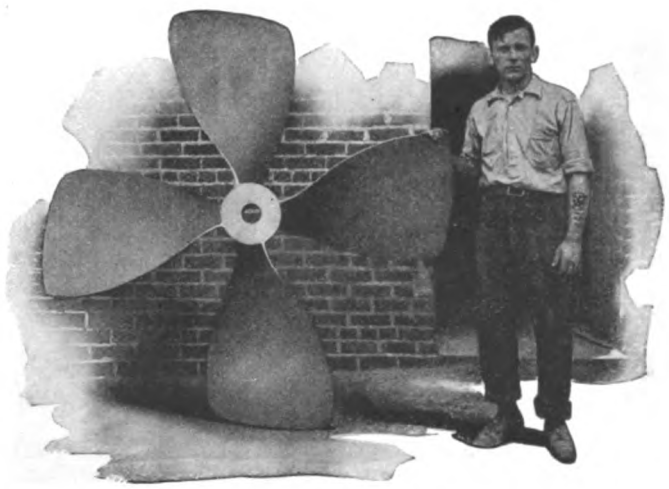

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These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

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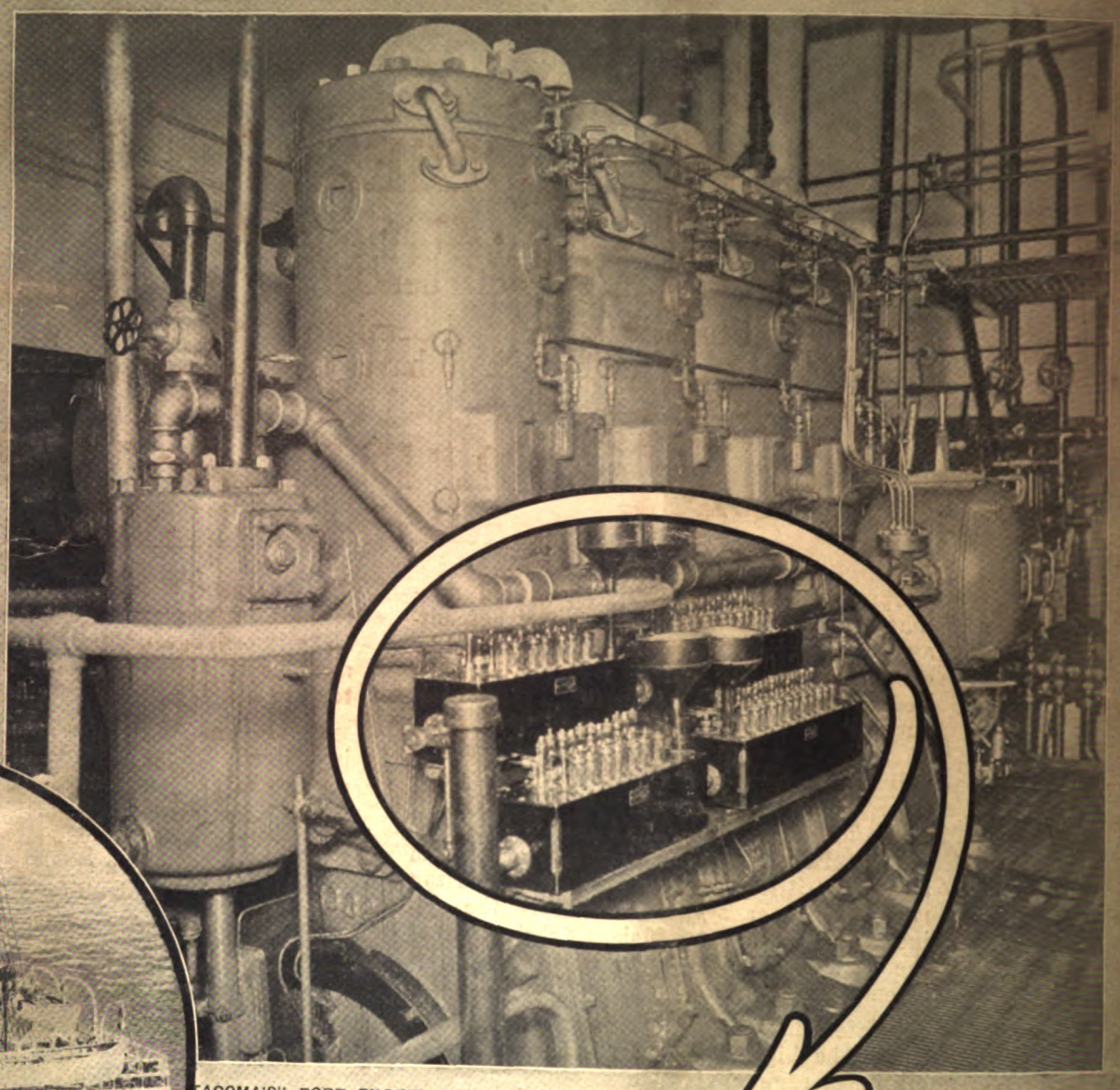
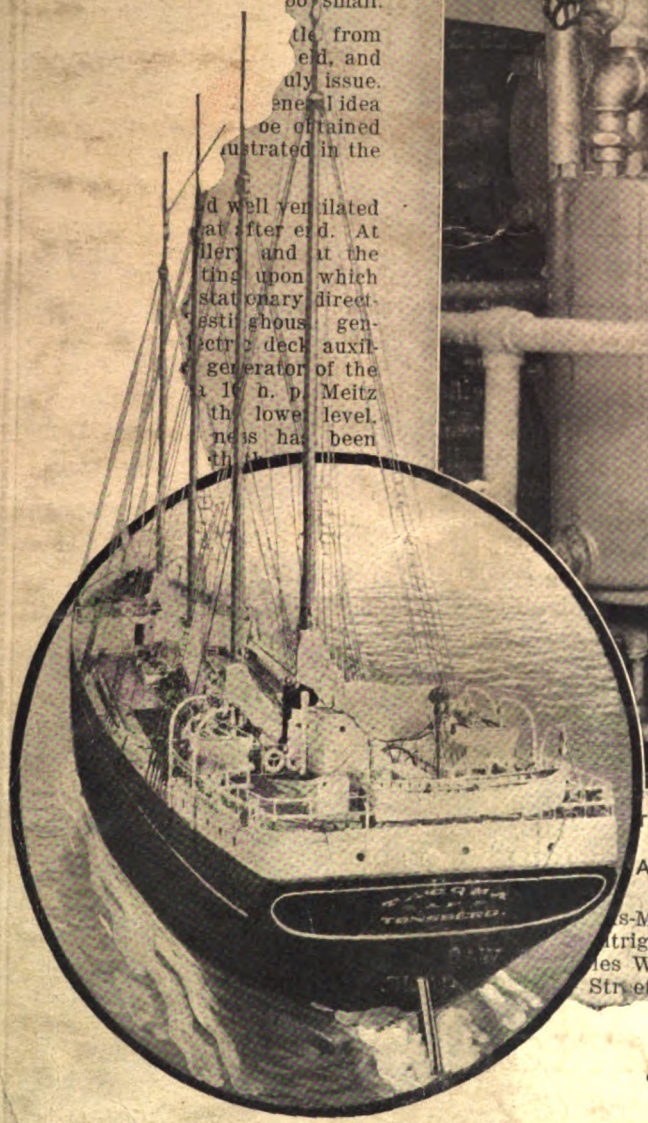
...ngined Auxiliary Goes Into Service





...TACOMA'S" PORT ENGINE, MEITZ, 240 B. H. P., FOUR CY... ...18½, 240 REVS.

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FORCE-FEED
Lubricators

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They must be built right. There must be no chance for trouble. Each ship must perform its own function else the great issue may be lost. The welfare of the country may rest on even a single ship.

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A good engine must have good lubrication.
The McCord Lubricator used is Class "B." It is designed especially to lubricate an entire power plant from a certain point. It will deliver oil any distance against any pressure.

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Motorship Dept.
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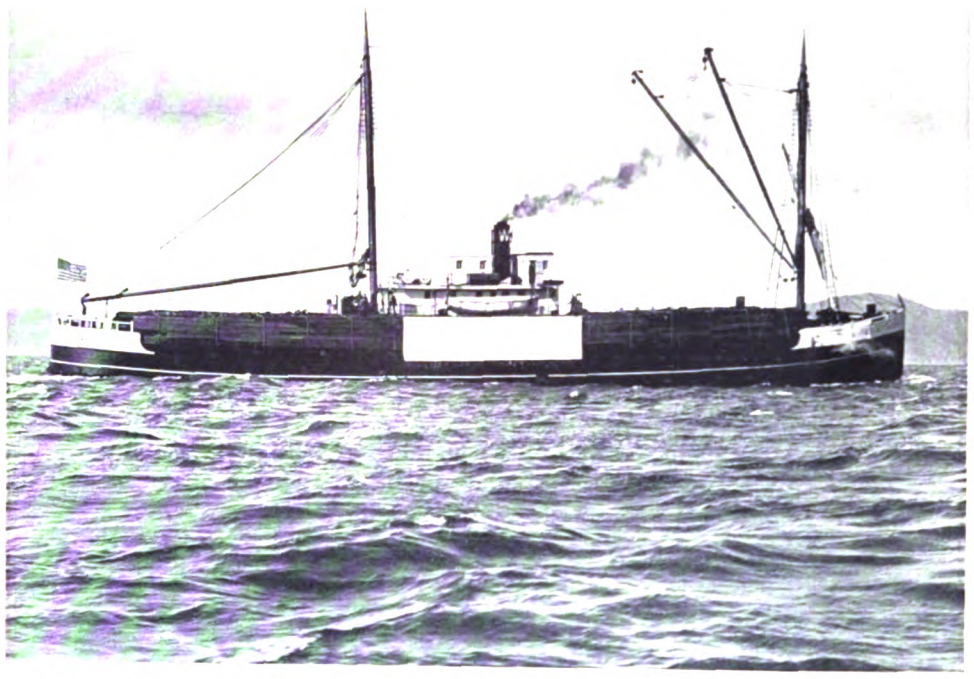

E. K. Wood Lumber Company's M. S. "Sierra" equipped with two 320 b. h. p. Model "M-11" "Bolinder" Fuel Oil Engines, leaving San Francisco for Valparaiso with 1,250,000 feet of lumber and sufficient fuel for round trip.

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THE ENGINE THAT IS NOT A SEMI-DIESEL

THE ENGINE THAT IS THE BOLINDER

THE STANDARD FOR HOT-BULB ENGINES

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Heavy-Duty Marine Engines

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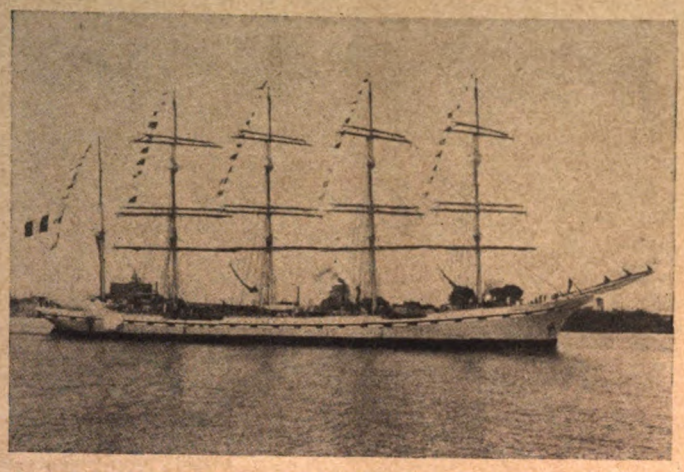

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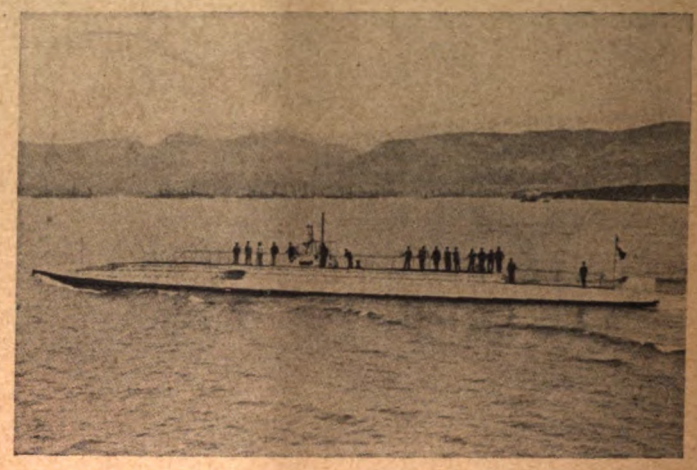

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For ONE Motor
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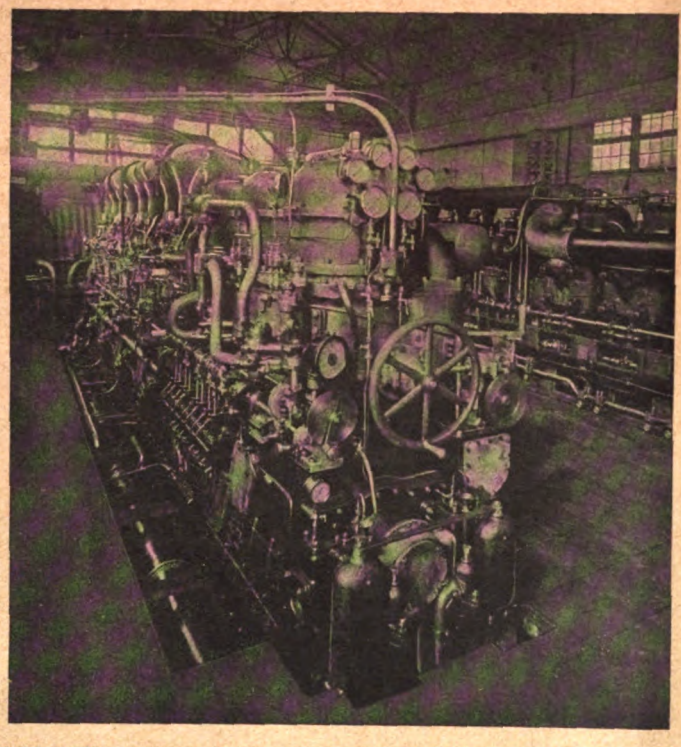

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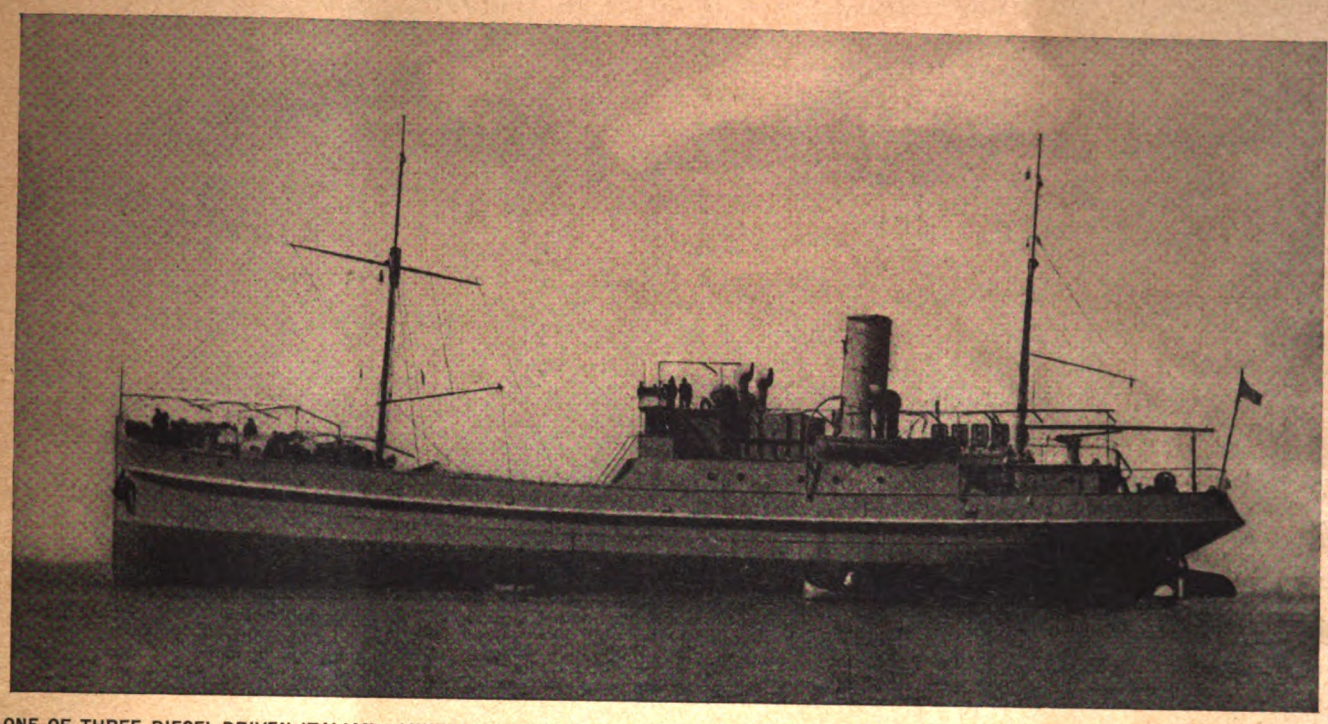
FRANCO TOSI
MARINE
DIESEL ENGINES



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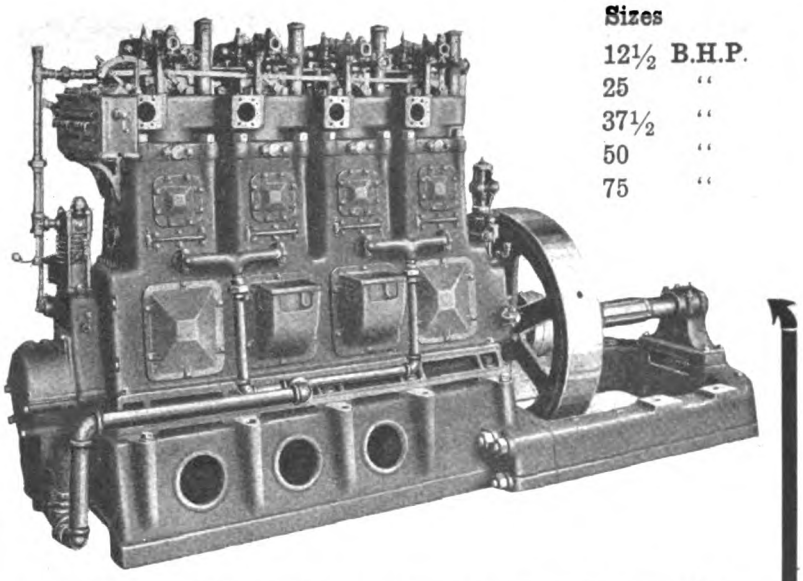

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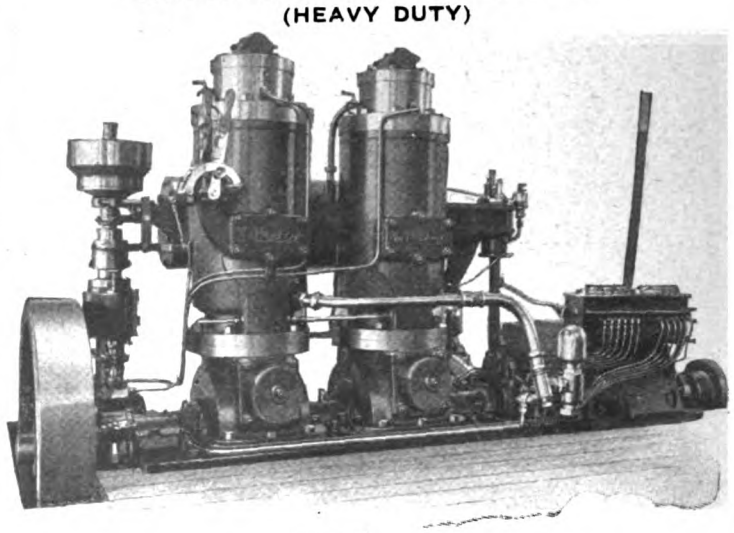

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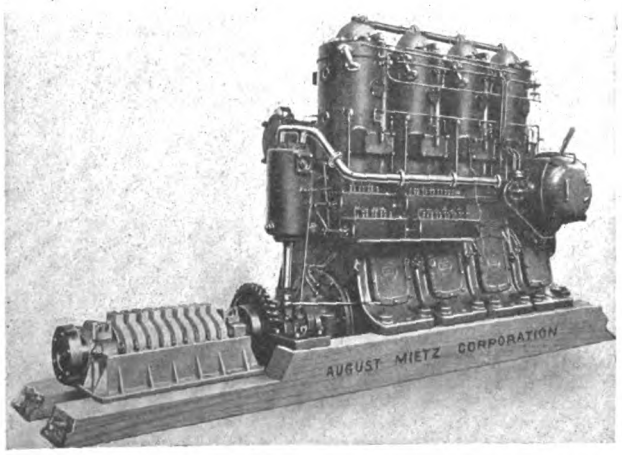

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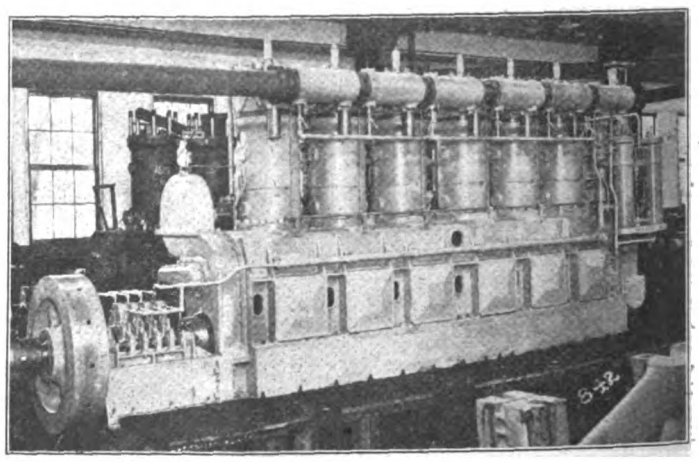

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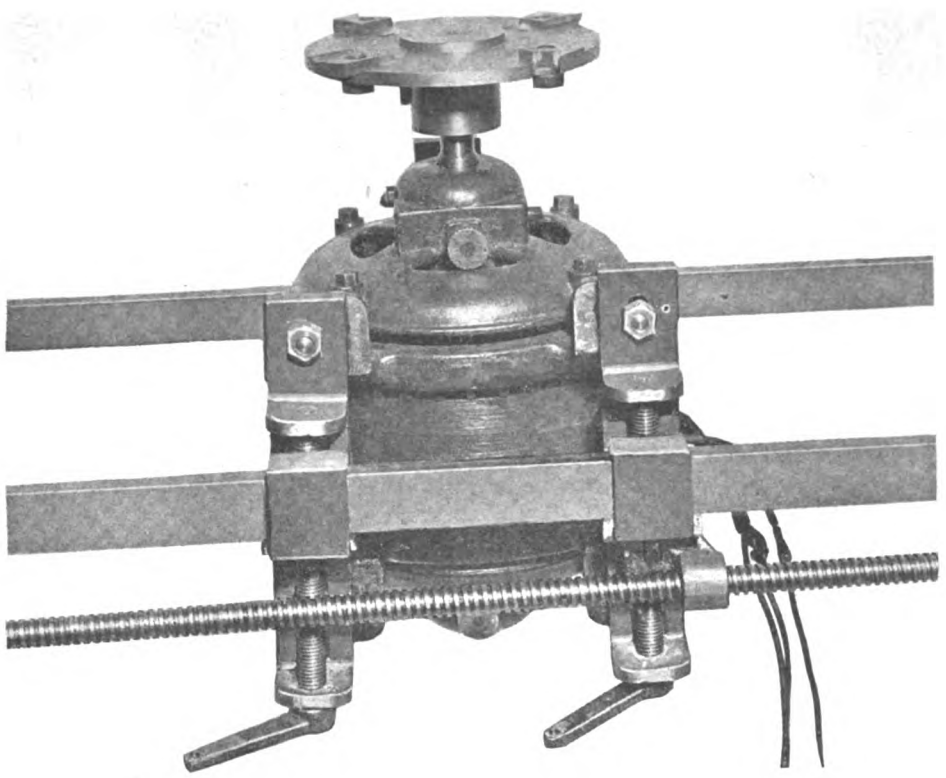

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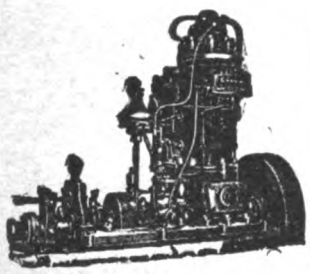

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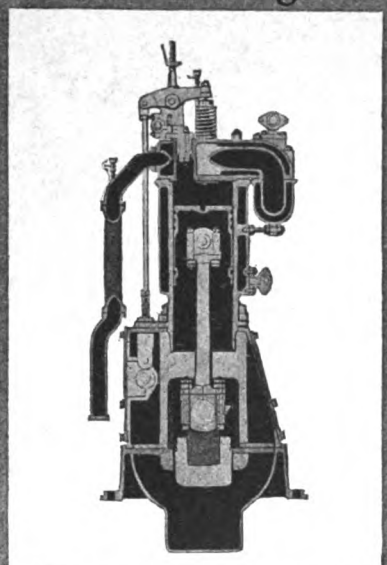

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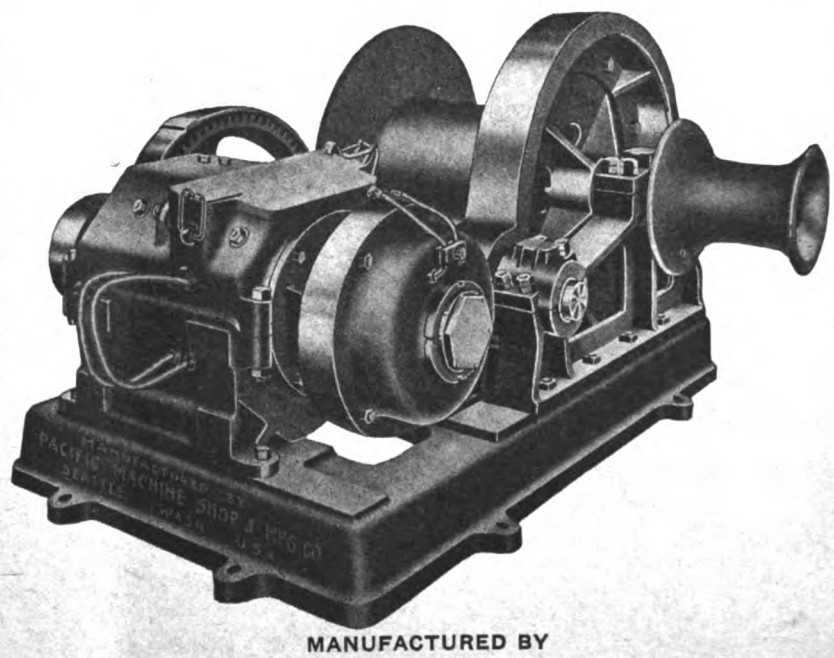

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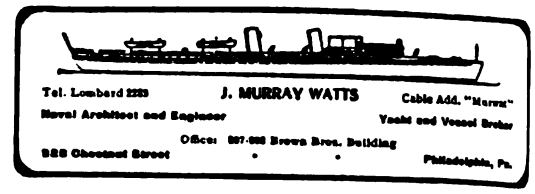

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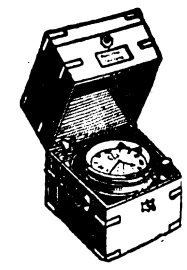

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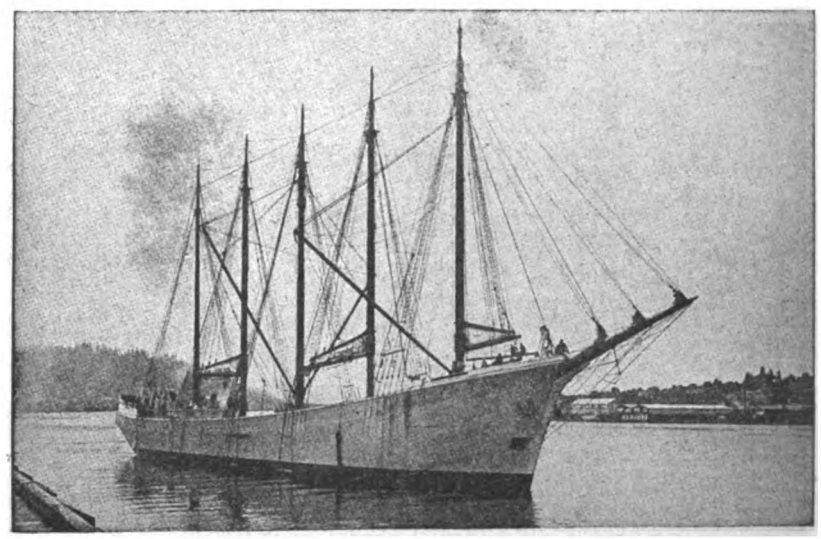

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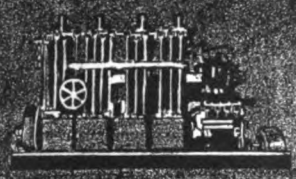

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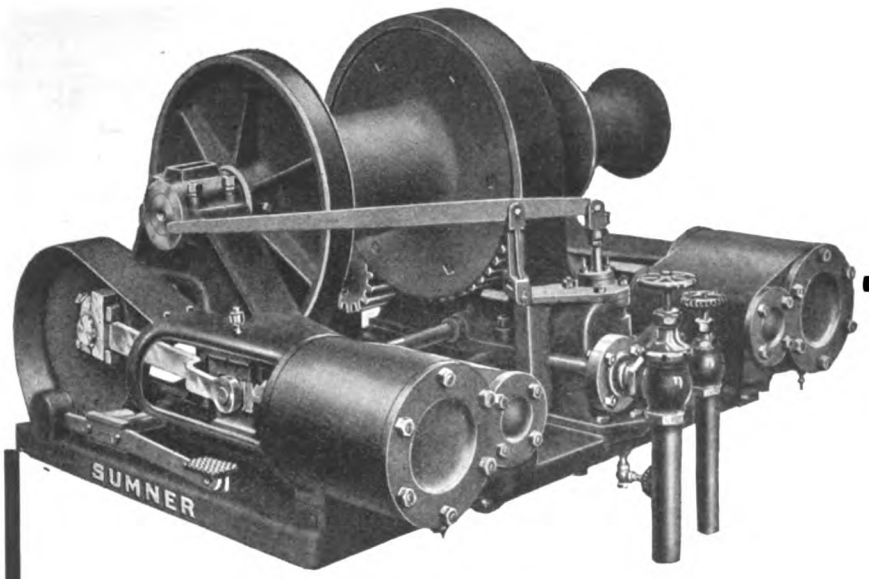

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A. D. 1918

"VULCANUS"—the first full-powered ocean-going Diesel ship, having been in service seven years, 2080 tons displacement, 1100 tons cargo capacity. Equipped with one WERKSPOOR reversible 500 b. h. p. Diesel Engine at 180 r. p. m. Speed 8 knots. Fuel-consumption 13 bbls. per 24-hr. day. Both hull and Diesel machinery were designed, constructed, and trials run, in 6 months from date of order. Her engine was guaranteed not to exceed 0.42 lb. per b. h. p. of Taraken crude-oil, with a specific-gravity of 0.950 at 15 deg. Cent., and ran on this oil successfully for two years. She now is on a different route.

The "Vulcanus" had run 210,000 sea-miles under power up to the beginning of December last, and her owners say that her Werkspoor-Diesel engine is in good order and condition

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DIESEL MARINE TYPE ENGINES

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And No Ship Is "Class A" Without a

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In Fact Old Established Lines of Ship Chandlery That
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PIER 8, SEATTLE, U. S. A.

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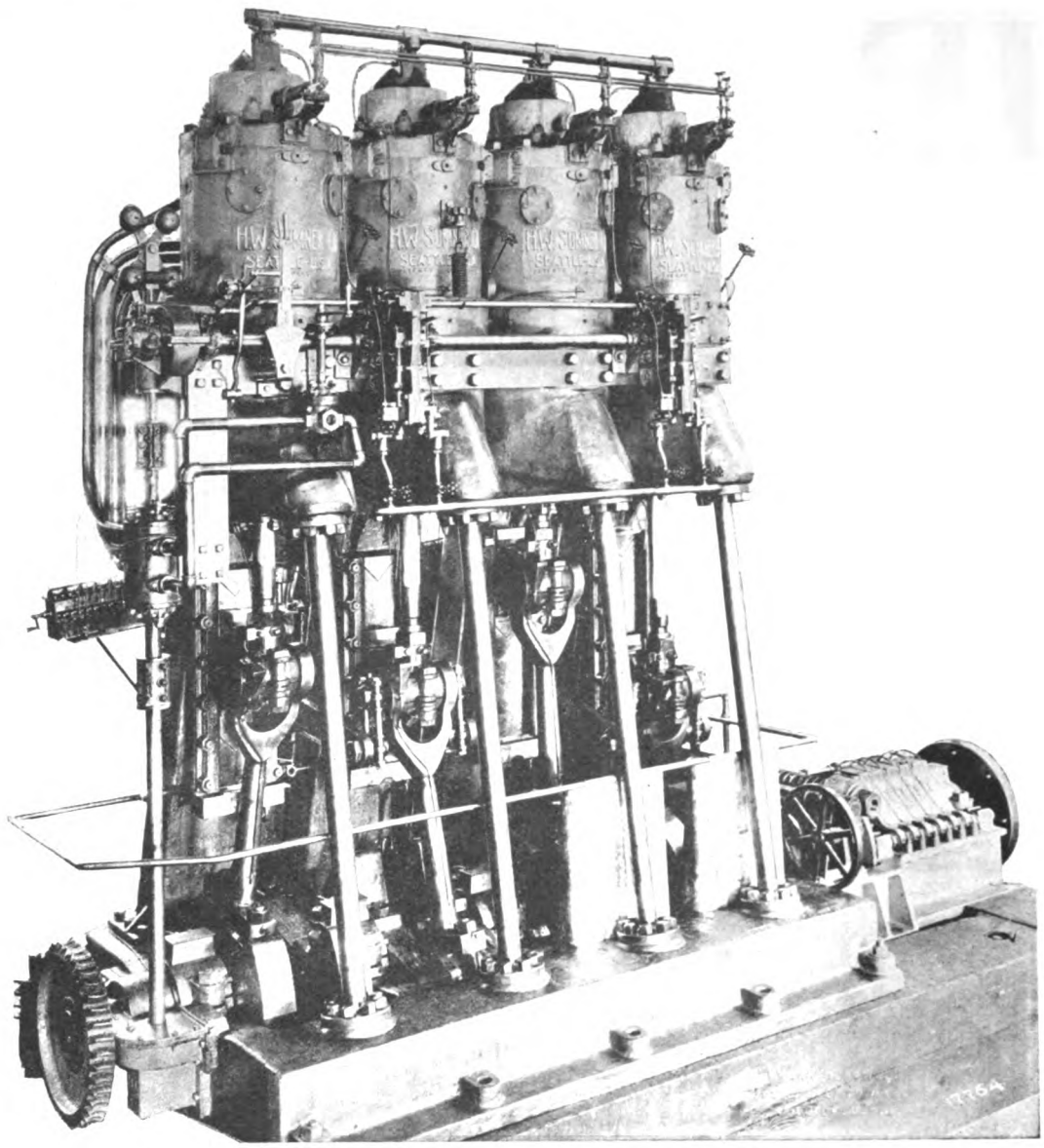

350 SHAFT HORSE POWER

The above is a photograph of one of the main engines of the M. S. "Santino," the first vessel equipped with Sumner Heavy Oil Marine Engines.

This vessel has made a voyage of more than 6,500 miles on schedule time without engine troubles. Fuel consumption, 15.5 bbls. per 24-hour day.

Sumner Heavy Oil Marine Engines

6000 (Shaft) H. P. Under Construction

We Are Prepared to Make Six Months Delivery on
350 Shaft Horse Power and 600 Shaft Horse Power
4 cylinder *6 cylinder*

H. W. SUMNER COMPANY

L. C. SMITH BUILDING

H. W. SUMNER *Seattle, U.S.A.* ALBERT E. PARKER

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Operating on Low-Gravity Crude or Fuel Oils

NOW BEING BUILT ON THE PACIFIC COAST

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H. P.

Werkspoor
500 to 2000
H. P.

Marine
or
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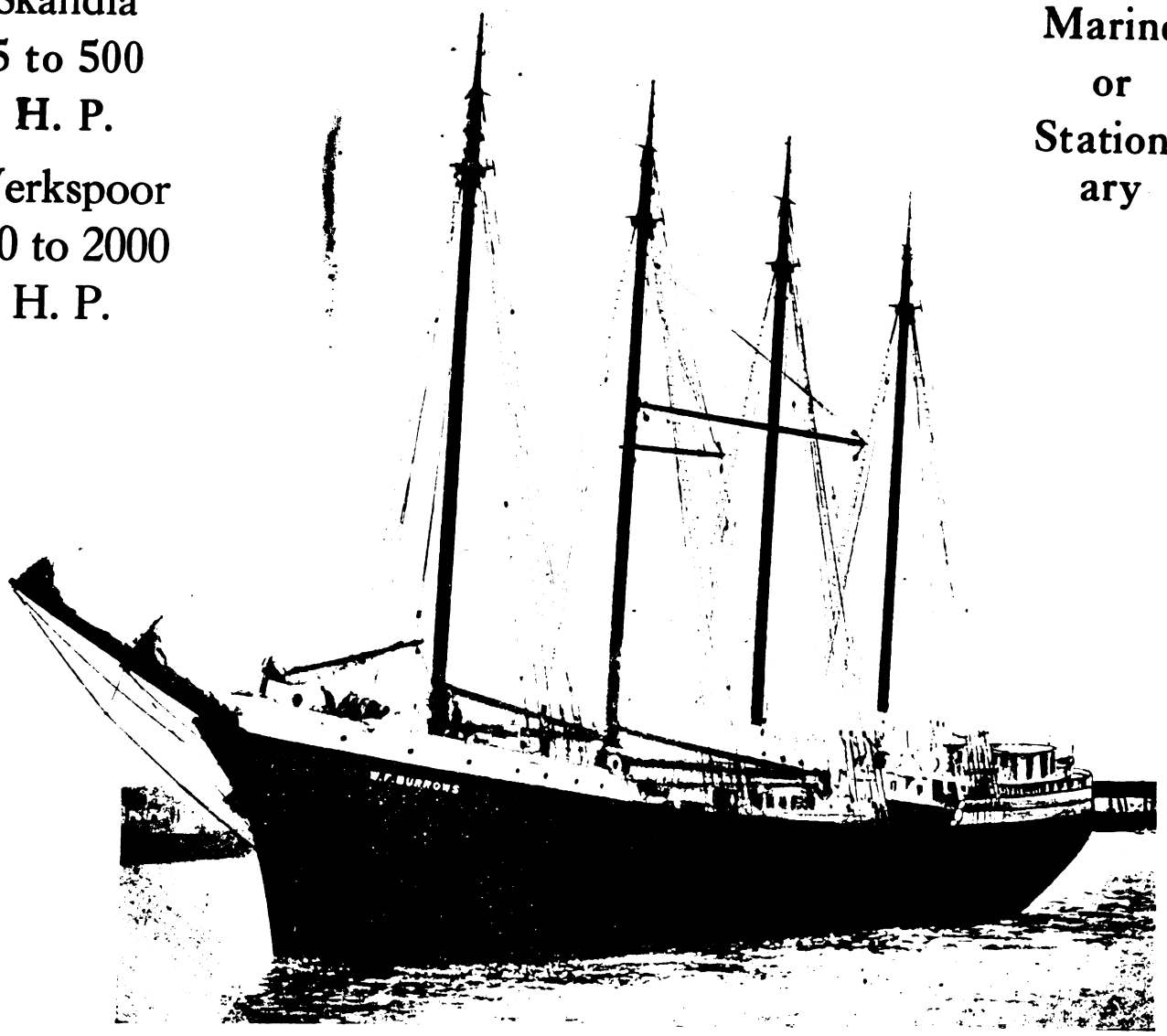

MOTORSHIP "W. F. BURROWS," OWNED BY LIBBY, McNEILL & LIBBY
Used in Transporting Canned Salmon from Alaska to Seattle
2 240 h. p. Skandia Oil Engines. Length 235 ft.; Beam 40 ft.; Depth 20 ft.

Skandia Pacific Oil Engine Co.

Pacific Coast Builders of Werkspoor Diesel Engines

Factory: Oakland, Cal.

Northwestern Agents
SKANDIA ENGINEERING CO.
101 Grand Trunk Dock.
Seattle, Wash.

Eastern Agents
H. S. JOHANNSEN
50 Church St.
New York, N. Y.

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Peninsula Shipbuilding Company

Builders of

SHIPS FROM DOUGLAS FIR

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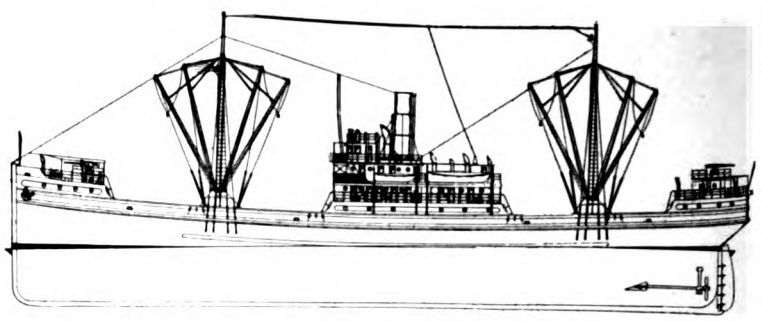


PACIFIC COAST TYPE

4,000-Ton Wooden Steamer, as Designed by us, and Building for

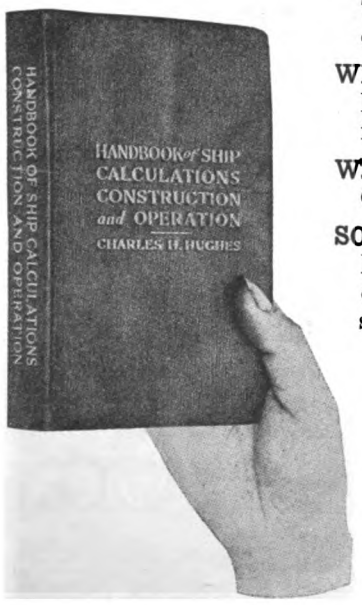
EMERGENCY FLEET CORPORATION

General Offices: 911 Securities Building
Plant: Aberdeen, Wash.

Handbook of Ship Calculations

CONSTRUCTION and OPERATION

By Chas. H. Hughes



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Trautwine's book is to the civil engineer;

WHAT
Kent's book is to the mechanical engineer;

WHAT
Osler's book is to the doctor.

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Hughes' book to everybody concerned with the designing, construction and operation of ships. This handbook contains upwards of 1000 pages and 120 illustrations. It is of convenient size, bound in full flexible leather, gilt edges. Printed in clear type on good paper.

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DO you wish to keep in touch with the news of the greatest oil-producing fields in the world?

The Gulf Coast Oil News is the only oil journal published in the Coastal States. Its news is authentic, live and right up-to-date. It is not too technical for the layman and proves of great help and interest to investors the country over.

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Gulf Coast Oil News
HOUSTON, TEXAS

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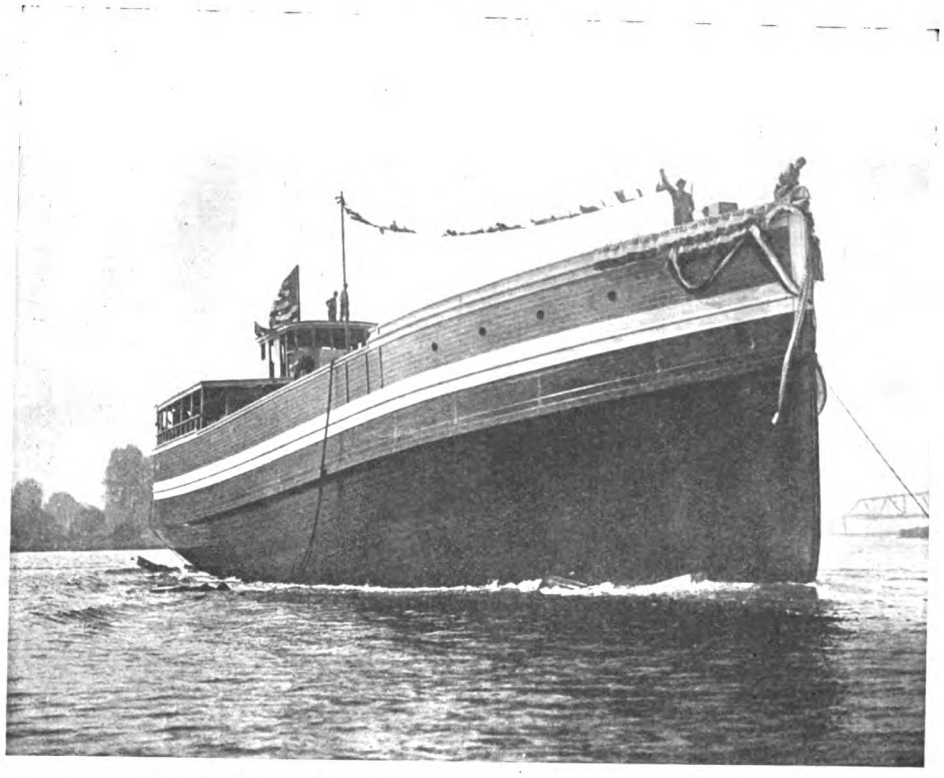
ATLAS FULL DIESEL TYPE ENGINE

SERVICE RELIABILITY POWER

ATLAS-IMPERIAL

DIESEL ENGINES BUILT

IN SIZES From 110 to 1200 B. H. P.



DISTILLATE ENGINES BUILT

IN SIZES From 4 to 250 B. H. P.

FREIGHTER "APEX" EQUIPPED WITH 350 H. P. ATLAS DIESEL

Mr. Lee H. Wakefield, the owner of the "Apex" is also the owner of seventeen boats installed with Atlas engines, two of these being Atlas Diesels. Mr. Wakefield selects the Atlas knowing that it is the best engine obtainable and that their service is unequaled.

AN ENGINE NOT AN *EXPERIMENT*

ATLAS-IMPERIAL GAS ENGINE CO.

MAIN OFFICE — OAKLAND, CALIFORNIA — FACTORY

REPRESENTATIVES:

SEATTLE, WASH.,— O. E. Nilsen, Northwest Sales Mgr., Office and Salesroom: 901 Western Ave., cor. Marion St.

Nome, Alaska—John J. Sesnon Co.
Ketchikan, Alaska—Ketchikan Iron Works.
Aberdeen, Wash.—Gus. Lindberg.
Astoria, Ore.—Atlas Gas Engine Agency, 509 Bond St.
Portland, Ore.—Bell Oil Co., 14 N. Front St.
Sacramento, Cal.—Nunes Bros., foot R St.
Los Angeles and Vicinity—Fellows & Stewart, Wilmington, Cal.
Stockton, Cal.—Stockton Iron Works.
Sydney, Australia—Atlas Oil Engine Co. 15 Market St.
New Orleans, La.—J. G. Davis, 1324 Music St.
Mexico City—Wm. Young & Co., La Calle de Gante No. 11.
Papeete, Tahiti—Emile Levy.
Honolulu, T. H.—Cotton, Neill & Co
Vancouver, B. C.—Ferrier and Lucas, 426 Howe St.

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Saves $68.40 per Week With a "C-O" Engine

THE "HATTIE CREEF" AND HER 16-YEAR-OLD ENGINEER.

THE GLOBE FISH CO., owners of the "Hattie Creef," replaced her 40 H. P. gasoline engine with a 45 H. P. "C-O" Engine. They now use 270 gallons of Fuel Oil at 8c. each week instead of 375 gallons of gasoline at 23c., saving $64.65 in fuel alone. They also save an average of $3.75 per week in repairs.

"C-O" Marine Oil Engines

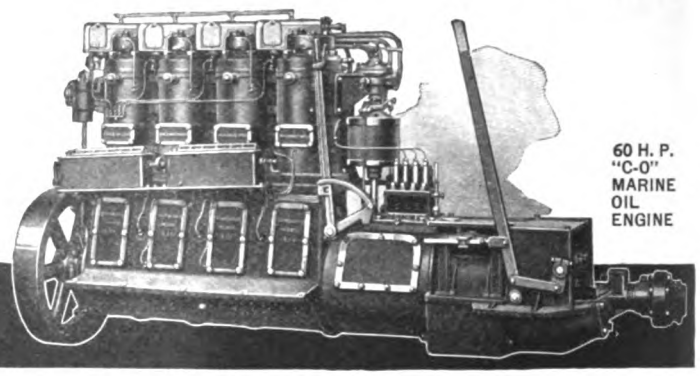
30 to 200 H. P.—Operate economically on

LOW PRICED FUEL OILS

FAIRBANKS, MORSE & CO.

CHICAGO NEW YORK SAN FRANCISCO

The "Hattie Creef" is 64' 8" long, with 18' 4" beam, and draft of 5½' loaded; 4½' light, powered with 45-H. P. "C-O" Engine, speed loaded 8 miles per hour, and makes a round trip of 170 miles, 3 times weekly, using 22° Texas Marine Fuel Oil.



60 H. P. "C-O" MARINE OIL ENGINE

AMERICAN-HAWAIIAN STEAMSHIP CO.

(BONDED LINE)

THE PANAMA CANAL LINE

ALL SAILINGS BETWEEN U. S. ATLANTIC AND U. S. PACIFIC PORTS CANCELED UNTIL FURTHER NOTICE

OPERATING THE FOLLOWING

S. S. "ALASKAN"—12,000 tons, twin screw
S. S. "AMERICAN"—8,000 tons.
S. S. "ARIZONAN"—12,000 tons, twin screw
S. S. "CALIFORNIAN"—8,000 tons
S. S. "DAKOTAN"—10,000 tons
S. S. "FLORIDAN"—10,000 tons.
S. S. "HAWAIIAN"—8,000 tons
S. S. "IOWAN"—10,000 tons
S. S. "KANSAN"—12,000 tons, twin screw
S. S. "KENTUCKIAN"—10,000 tons
S. S. "MEXICAN"—12,000 tons, twin screw
S. S. "MINNESOTAN"—10,000 tons
S. S. "MONTANAN"—10,000 tons
S. S. "OHIOAN"—10,000 tons
S. S. "OREGONIAN"—8,000 tons
S. S. "PANAMAN"—10,000 tons
S. S. "PENNSYLVANIAN"—10,000 tons
S. S. "TEXAN"—12,000 tons, twin screw
S. S. "VIRGINIAN"—12,000 tons, twin screw

ALL OF THE COMPANY'S STEAMSHIPS ARE FITTED WITH THE GRIMM FIRE EXTINGUISHING APPARATUS

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CORRECT FUEL
FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil.

Fuel oil for the Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
For Diesel and Semi-Diesel Engines

Operators of Diesel engines should note that if the fuel contains too large a percentage of high boiling constituents complete combustion with the fuel will not be realized. The products of an incomplete combustion are tar, asphaltum and free carbon. These products form a sticky deposit on the valves which prevents their proper operation. This results not only in poor compression and loss of power, but in an excessively high fuel consumption. Tar and asphaltum also deposit themselves behind the Piston rings, which causes them to score the cylinders and prevent efficient lubrication of the Piston. This sticking of the Piston is often blamed on the Lubricating Oil.

"Safety first" dictates that the flash point should be high enough to insure safety to oil in storage or in the bunkers.

In addition the Fuel Oil should have a fluidity that permits it to be readily pumped at all working temperatures.

Uniformity is necessary in fuel oil, so as to eliminate the alteration of valves and air pressure for each run of fuel oil.

To produce a fuel oil that embodies all these necessary qualities it requires an intimate knowledge of the Diesel engine itself and the refining experience and equipment to turn out fuel oil to specifications.

Calol Fuel Oil is the result of scientific investigation and a carefully worked out process of preparation.

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

RICHMOND, CALIF.
SEATTLE, WASH.
PORTLAND, (WILLBRIDGE) ORE.
HONOLULU, T. H.

By barge at:

SEATTLE, WASH.
SAN FRANCISCO, CALIF.

CORRECT LUBRICATION
For Diesel and Semi-Diesel Engines

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surface-Ignition, Semi-Diesel, or Diesel type—we recommend

CALOL DIESEL ENGINE OIL OR
CALOL ENGINE OIL HEAVY

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service. At points named above and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

Standard Oil Company
(CALIFORNIA)

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Madison-Kipp Lubricators

VALVELESS FORCE-FEED

They Help Safe-guard the Motorship's Future

Diesel and hot-surface type motors must be built to last in service if the motorship is to be assured immediate success.

As in all machinery, adequate lubrication is absolutely necessary to protect vital parts from costly or disabling wear.

Because of the low-grade fuel used in motorships, proper motor lubrication is even more vital to them than in motors using higher grade fuel.

For Madison-Kipp Lubricators guard your motor from the wear due to the fuel-pollution of lubricating oil in a crank-case system.

These lubricators feed only "live" oil.

Because of the Kipp Valveless Principle they feed it unfailingly against pressures as high as 133 atmospheres.

They prevent the common condition of gummy cylinder walls, worn pistons, and consequent poor compression and costly repairs, due to carbon and sediment-laden crank-case lubrication.

They save oil, even though they use it only once, because their feed adjustments are so accurate and easily made that waste is eliminated.

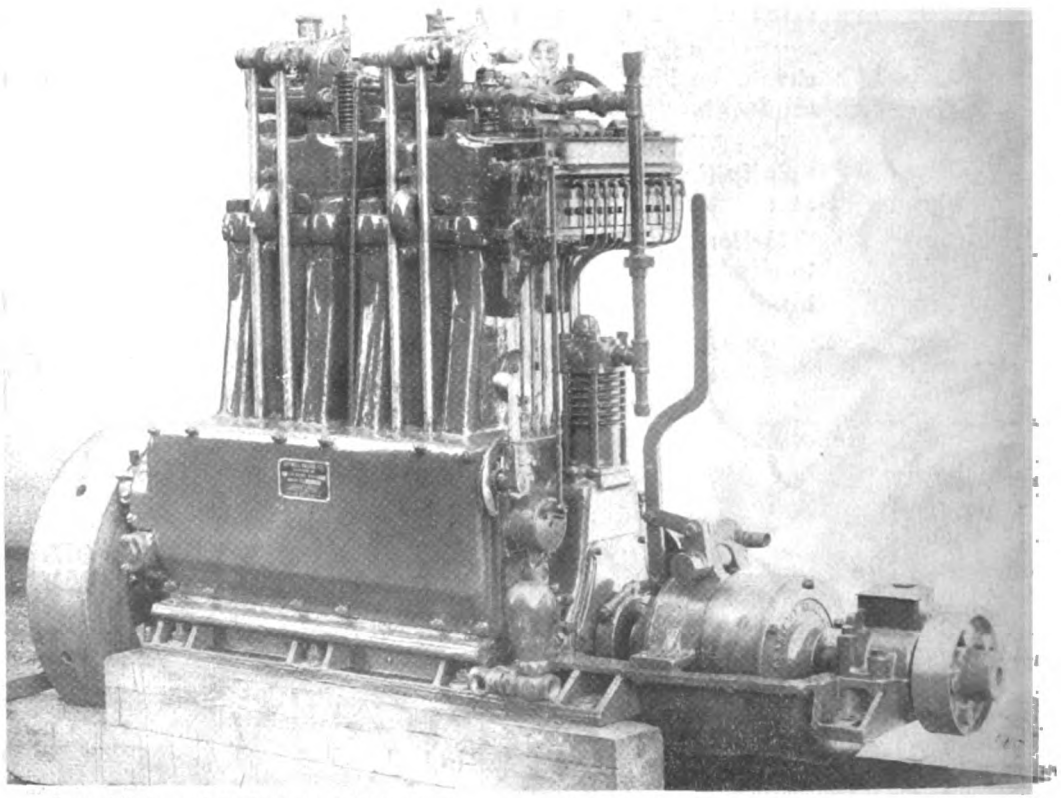
In cross-head types of motors they are being used to save oil and insure long wear by feeding "live" oil to the motor only, while the bearings are served by strained, used oil in a supplementary system.

In other motors of the same type they are giving unusually saving service for motor and bearings both.

In trunk-piston types of motors, where construction makes a double lubricating system impossible, Madison-Kipp systems lubricate all parts and thus prevent the troubles, wear, or repairs common to motors of this type when lubricated by crank-case systems.

Madison-Kipp Lubricators are used not only on Diesel and hot-surface types of motors but on heavy tractors, steam-hammers, dredges and compressors.

We can make immediate deliveries, for our factory is the largest in the world exclusively devoted to lubricator manufacture.



Burnoil Motor made by the Burnoil Engine Company of South Bend, Indiana--equipped with a Madison-Kipp Lubricator

Madison-Kipp Lubricator Company

MADISON, WISCONSIN

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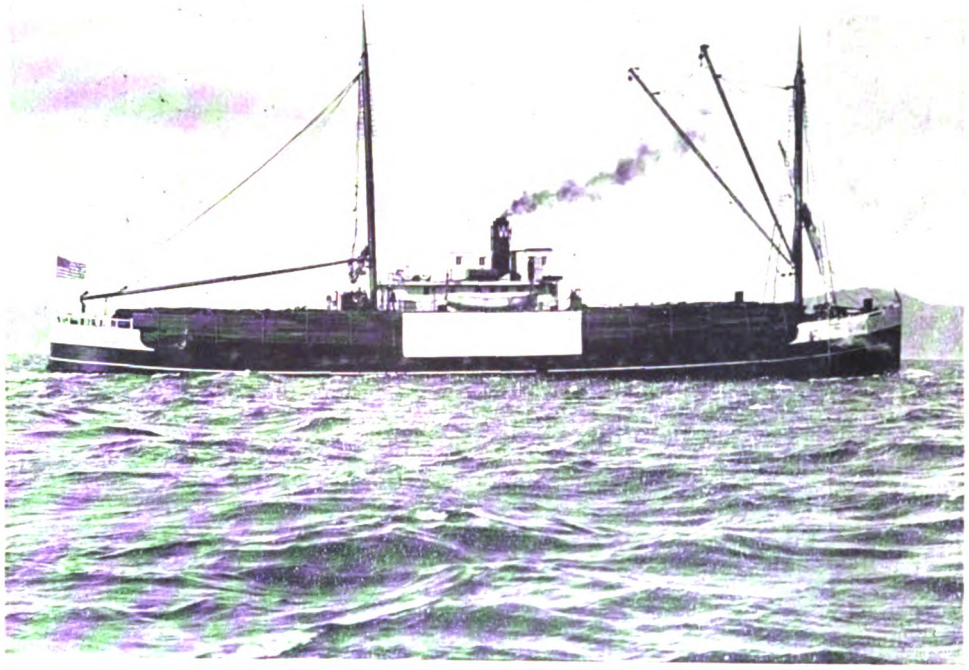
BOLINDER'S

500,000 B. H. P. of Bolinder's Engines Now in Use in All Parts of the World

Present Sales and Yearly Output 70,000 B. H. P



E. K. Wood Lumber Company's M. S. "Sierra" equipped with two 320 b. h. p. Model "M-11" "Bolinder" Fuel Oil Engines, leaving San Francisco for Valparaiso with 1,250,000 feet of lumber and sufficient fuel for round trip.

Present U. S. A. Bolinder Installations 43,000 B. H. P.

Craft under construction and to be fitted with Bolinder Engines in the United States alone aggregate over 130,000 tons; Bolinder Engines now in service, over 12,000.

THE BOLINDER

THE ENGINE THAT IS NOT A DIESEL

THE ENGINE THAT IS NOT A SEMI-DIESEL

THE ENGINE THAT IS THE BOLINDER

THE STANDARD FOR HOT-BULB ENGINES

An example of the ruggedness of the Bolinder's engine was displayed in the case of the M. S. "Astri" recently. This vessel encountered a hurricane off Mazatlan and became severely strained, resulting in the flooding of the engine-room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

HENRY LUND & CO.

Marine Building, San Francisco, Cal.

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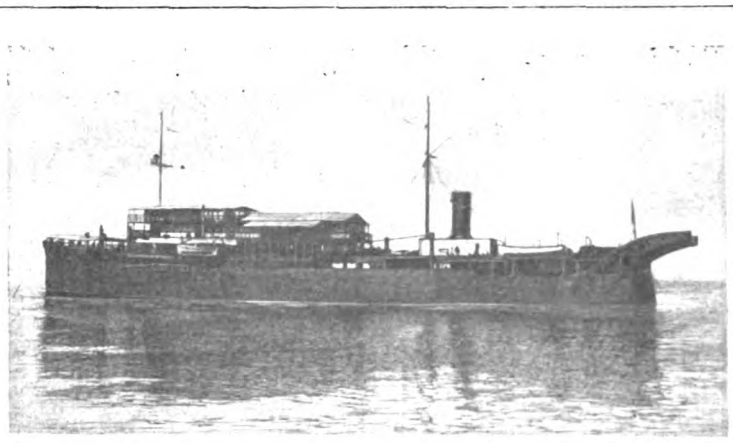
THE FIAT-SAN

Shipyard: Muggiano (Spezia), Italy
Telegraphic Address: Autoscafi-Pertusola

Capital L 22,000,000
Fully Paid



THE BRAZILIAN DEPOT MOTORSHIP "CAERA"

Why are our motors the most reliable ?

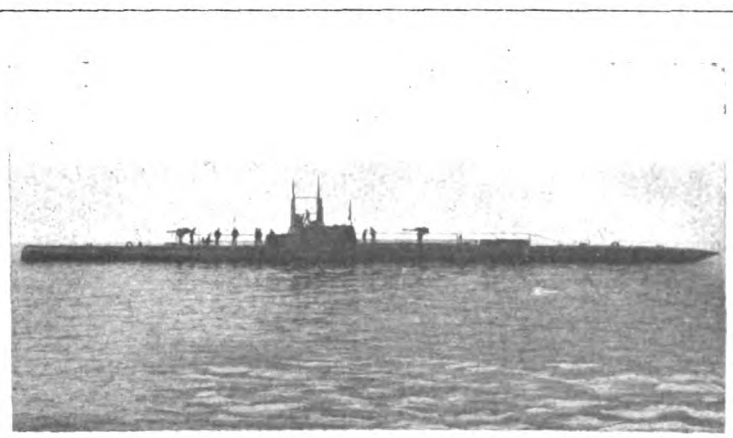
Slow Running Types for Merchant Marine

Type	2c-267[4]			2c-271[4]			2c-272[6]			2c-275[4]			2c-276[6]				
B. H. P.	300	350	400	600	700	800	900	1000	1200	1100	1200	1350	1600	1750	2000		
Revol.	125	150	170	115	130	150	115	125	150	100	110	125	100	110	125		
	38			80			115			120			160				

High Speed Types for the Navy

Type	2c-216[6]			2c-220[6]			2c-224[6]			2c-226[6]			2c-232[6]			2c-336[8]		
B. H. P.	290	325	350	530	600	700	775	875	1000	1100	1200	1300	1600	1750	2000	1600	1750	2000
Revol.	400	450	480	350	400	460	300	350	400	300	330	360	250	280	320	250	280	320
	8			16			26			38			70			72		

Note to Table: The small number in the corner of type-number square shows the number of cylinders.



SUBMARINE "FIAT-SAN GIORGIO"

—Reversing Motors from full ahead to full astern done in ten seconds.
—Fuel Consumption two-cycle engines, .045 lbs. heavy oil, high density containing up to 20% Pitchy and Tarry Matters.
—Lubricating Oil Consumption, 0.017 lbs.

Complete constructions of War and Merchant Ships.

Cargo and Passenger vessels of any capacity.

Ships equipped and repaired.

Heavy-Oil Marine Motors type FIAT-SAN GIORGIO for War and Merchant Ships of any capacity.

WORKS AT TORINO

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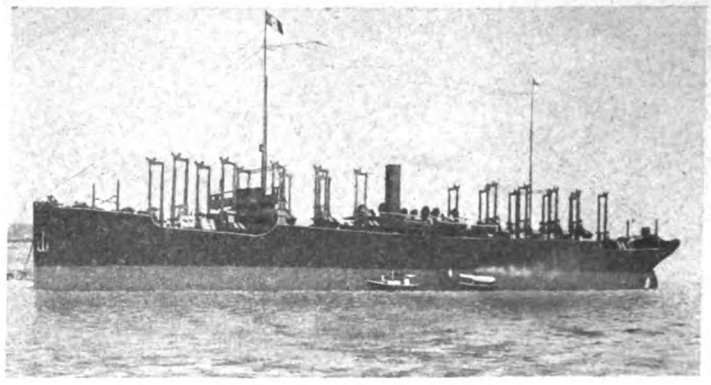
GIORGIO CO. LTD.

90,000 B. H. P. in Use!

Engine Works: Turin, *via* Cuneo, 20, Italy
Telegraphic Address: Autoscafi Torino

because we have been the pioneers to this type of engine, and have sacrificed time, money and labor in order to secure for the new era of ship propulsion the motors it needed.



CARGO STEAMER "MILORRO"

The plants which now show a continuous industrial development, will employ from 18,000 to 20,000 workingmen during the current year.

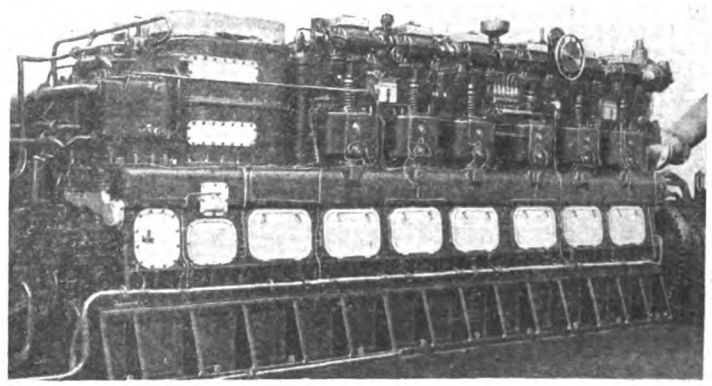
The Spezia Shipyard every year will launch not less than 18 motorships of 8,500 to 10,000 tons capacity each, with complete equipment and Diesel-type machinery built by the FIAT-SAN GIORGIO exclusively, while the output of submarines and torpedo-boats will remain undiminished.

Who Uses Fiat-San Giorgio Motors?

The Governments of:
Brazil, Denmark, Great Britian, France, Italy, Portugal, United States, Spain, Russia, Japan, Sweden and Germany (previous to the war).

The Italian Emergency Fleet

on their merchant motorships of 8100 tons D.W. of 11 knots speed



FIAT-SAN GIORGIO HIGH SPEED MOTOR, 1300 B. H. P.

—The license for the manufacture of Fiat-St. Giorgio Motors in the U. S. and Canada is available and for sale.

—Their representative is at present in New York City, at the Hotel Knickerbocker.

AND SPEZIA, ITALY

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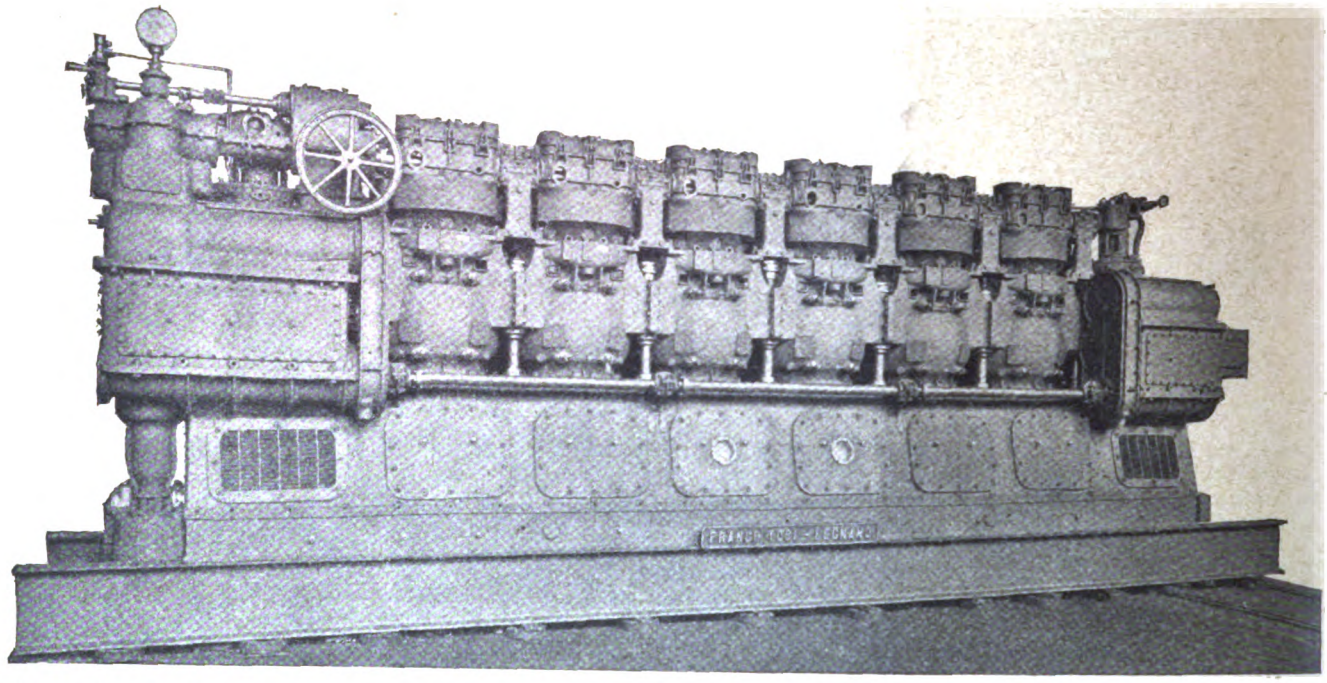
Great nations select f
McCORD FORCE-F



This TOSI 1300 b. h. p. Submarine Two-Cycle Type Diesel Engine was NOT fitted with a McCord Lubricator. *Its lubricating oil consumption was* 0.0334 *lb. per b. h. p. hour!*

This Great Superiority is Ea

—*because* they know that the McCor
although it supplies an abundance of oil at all times whe
exactly what the lubricator is doing. Individual pumping
without interfering with the others. The ratchets run in an

ANOTHER

McCord Force-Feed Lubricators are made of cast a

ASK FOR FUR

McCORD MANUFACTURIN

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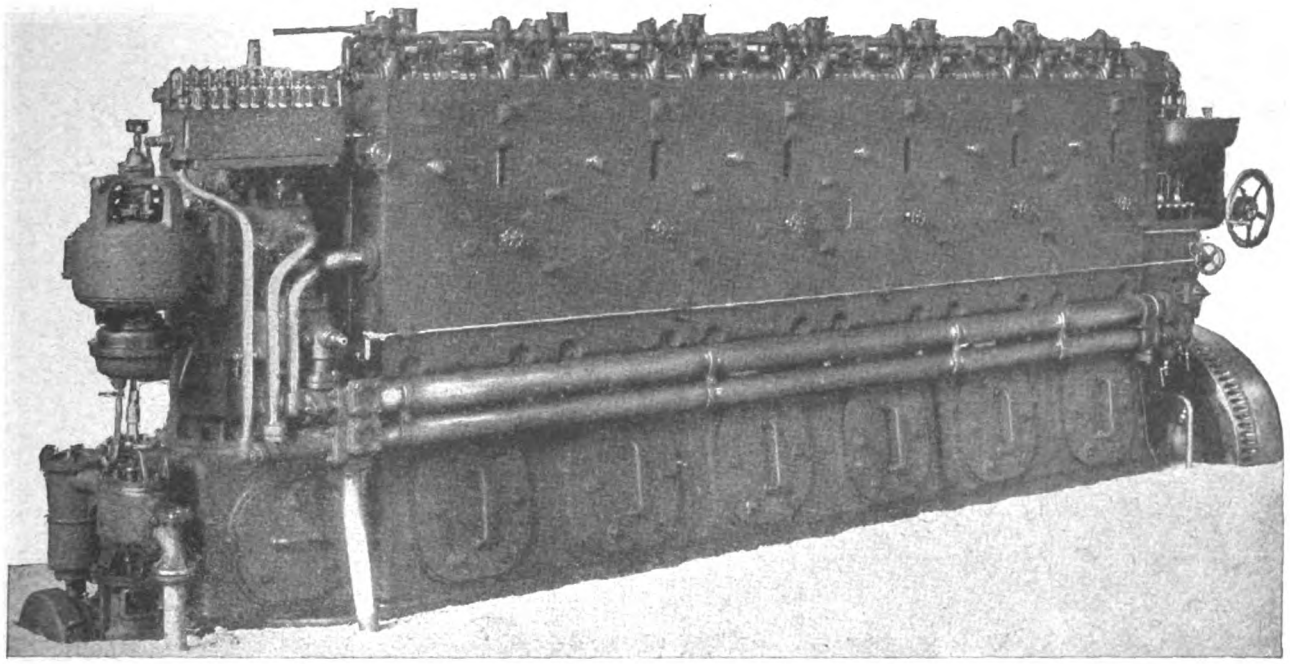
ec· submarine work the CE5 LUBRICATOR



This TOSI 1300 b. h. p. Four-Cycle Type Diesel Engine WAS FITTED WITH A McCORD LUBRICATOR. *Its lubricating oil consumption was only* 0.0180 *lb. per b. h. p. hour!*

Understood by McCord Users

rce-Feed Lubricator *does not waste oil,*
eeded. The plain sight feed enables the operator to know
may be adjusted outside the lubricator case one at a time
h.

FEATURE

ıded brass and will not corrode in salt-water service.

INFORMATION

CO. :: :: DETROIT, MICH.

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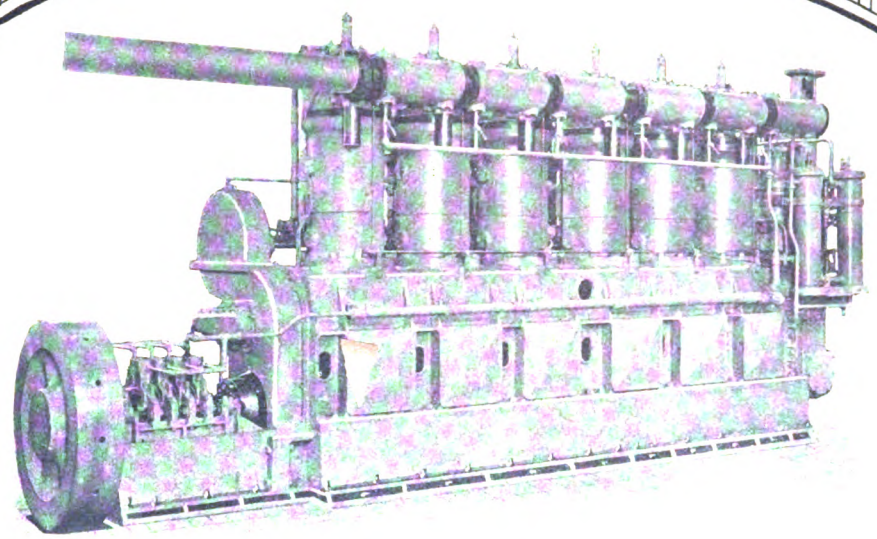
AUBURN McINTOSH & SEYMOUR CORP'N. NEW YORK



500 B. H. P. DIESEL TYPE REVERSIBLE MARINE ENGINE

These MARINE ENGINES are the result of EIGHTEEN YEARS' Stationary and marine DIESEL ENGINE EXPERIENCE and THIRTY YEARS' EXPERIENCE in building the LARGEST and HIGHEST GRADE OF STEAM ENGINES.

These engines are built in the LARGEST and most COMPLETELY EQUIPPED PLANT in this country devoted EXCLUSIVELY to the building of Diesel Type Oil Engines.

SHIP OWNERS AND SHIPBUILDERS should avail themselves of these facilities.

SIZES AVAILABLE: 300, 500, 750, 1200 and 1350 B. H. P. per shaft.

ALL SIX-CYLINDER, ALL FOUR-CYCLE, and all directly REVERSIBLE MODELS.

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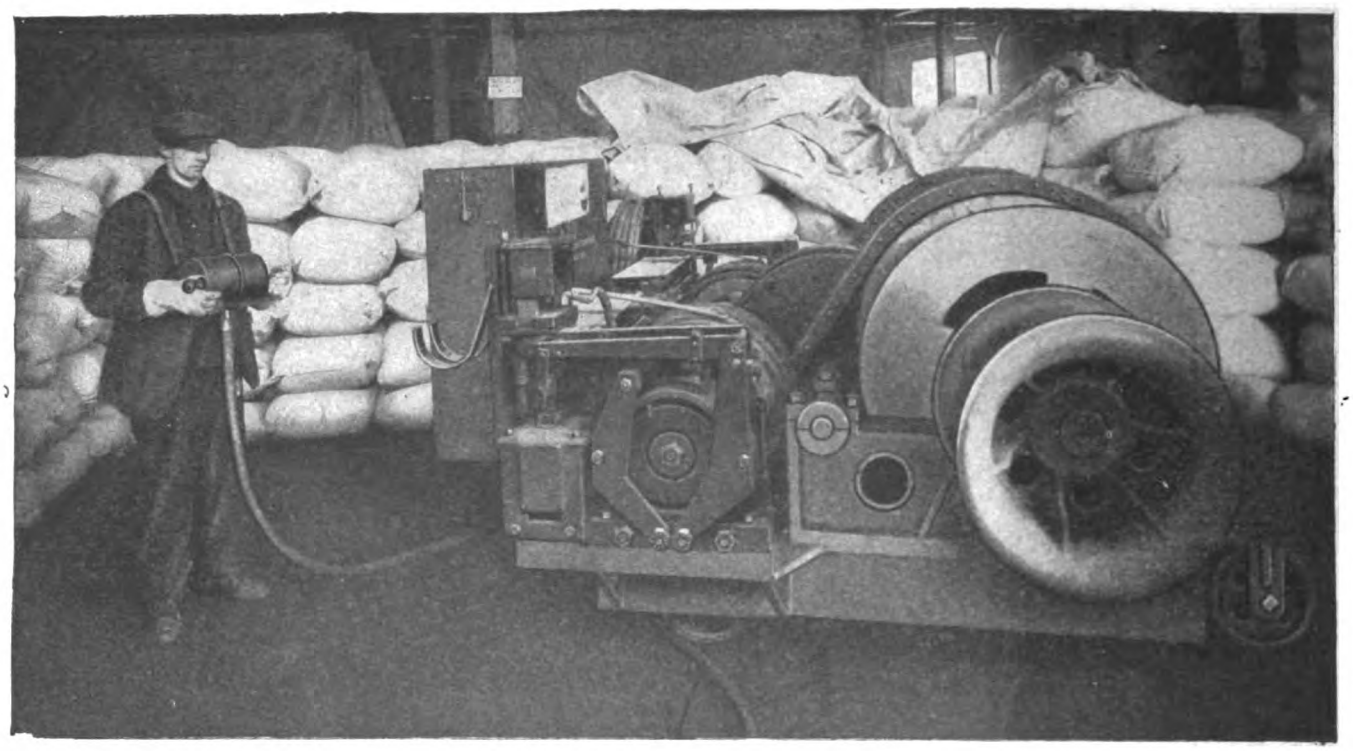

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Using G-E Portable Control Gear

Maximum dispatch, reduced cost, greater safety and lessened damages follow the use of winches equipped with G-E motors and portable controller, the latter hung over operator's shoulders.

Operator moves about following draft and controlling winches with muff-like controller—with electricity he does all the work usually done by two winchmen, one or two signalmen and two steam engines.

MAXIMUM DISPATCH

G-E equipment is always ready for instant use—no "standby" charges, overhaul bills or time lost getting old gear into working order.

Walking after and seeing his draft at all times the operator works very much faster than when depending upon uncertain signals—electricity relieves him of all physical fatigue usually occasioned by handling clumsy throttles, foot brakes and heavy reverse mechanisms. Speed is not limited by boiler capacity as operator usually has big city power plant to back him up.

Quicker turn round for vessels and increased prestige to the Port follow the use of G-E electrical equipment for burtoning.

REDUCED COST

Time is saved by winches being ever ready for work, men work faster knowing operator sees them, one man does the work of three or four, when hoist is still there is no power consumption, greatly increased dispatch reduces "overhead" charges and labor bill and the practical elimination of accidents and damage to properties or cargo, all combine to reduce cost.

GREATER SAFETY

The operator's eye is always on the business end of whips as he follows draft about and his co-workers are always in sight. All accelerating, speed setting, braking, reversing and stopping is done automatically since the operator merely starts each operation which is always performed at the same rate of speed by electricity. For instance, the operator turns a handle to start hoisting; he can turn it as fast as he wishes but the hoisting will not be done any faster than the electrical control permits. If he wishes, a very slow speed can be obtained, but the uniform rate enables co-workers and operator to judge movements accurately.

LESSENED DAMAGES

With draft always in sight and moving at a uniform speed, or uniformly accelerated speed, and with braking constant, damage to properties or cargo is inexcusable and leakers or poorly assembled drafts can be put down before loss occurs.

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For ONE Motor
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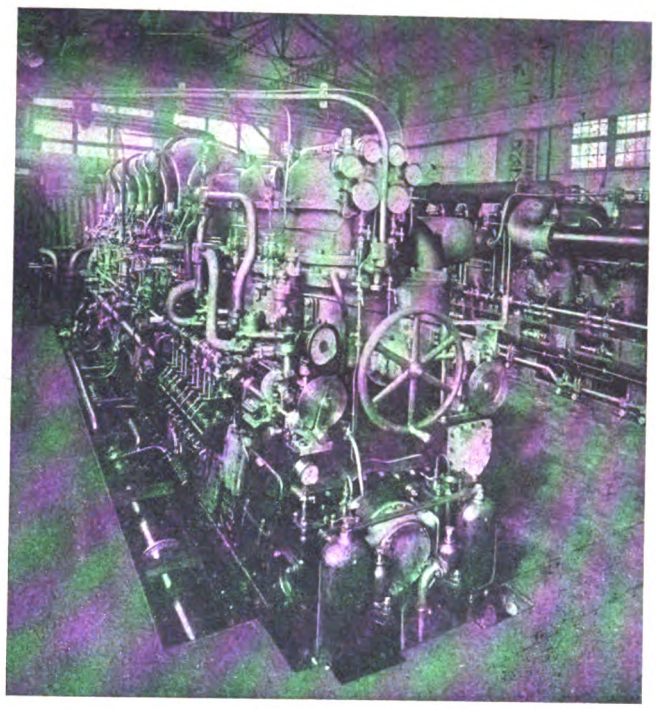

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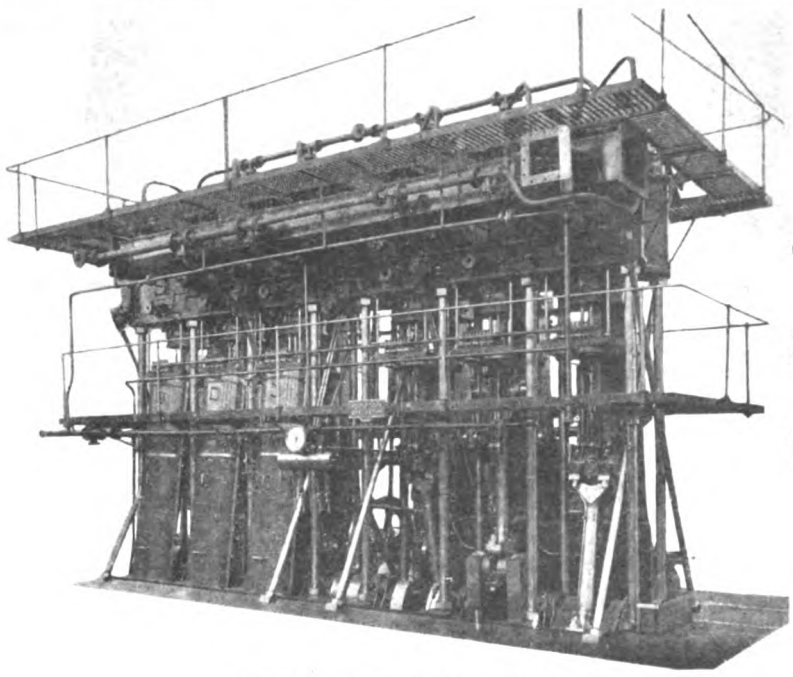

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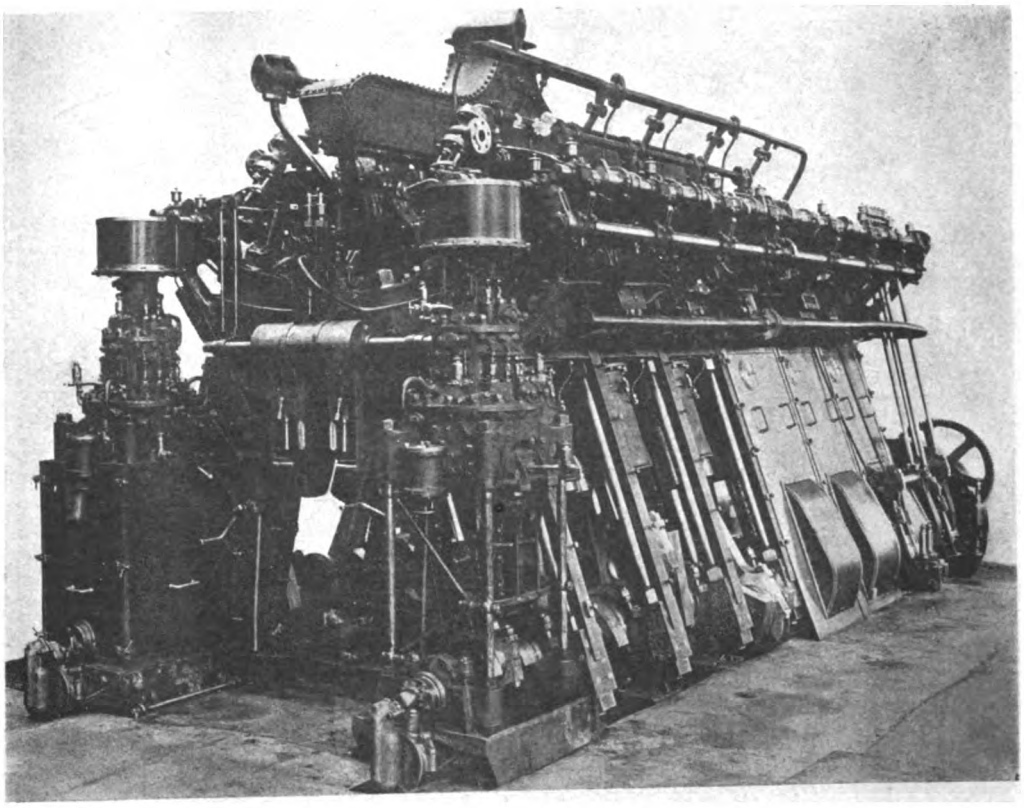

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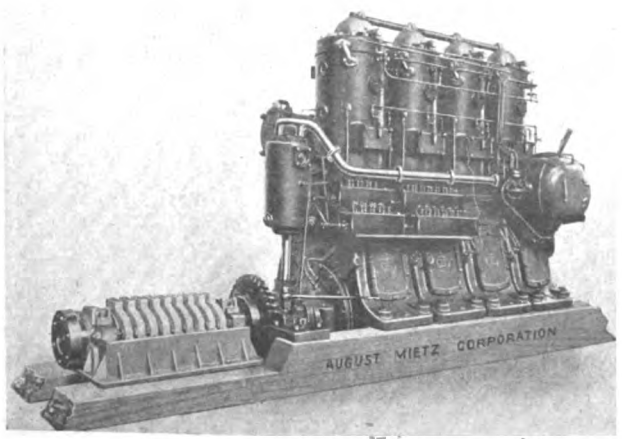

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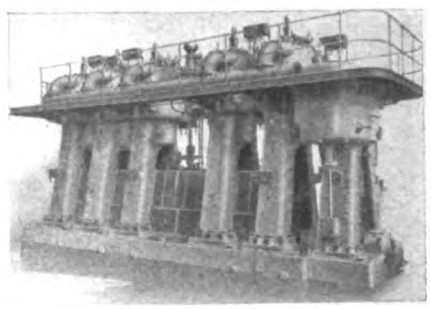

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FRANCO TOSI
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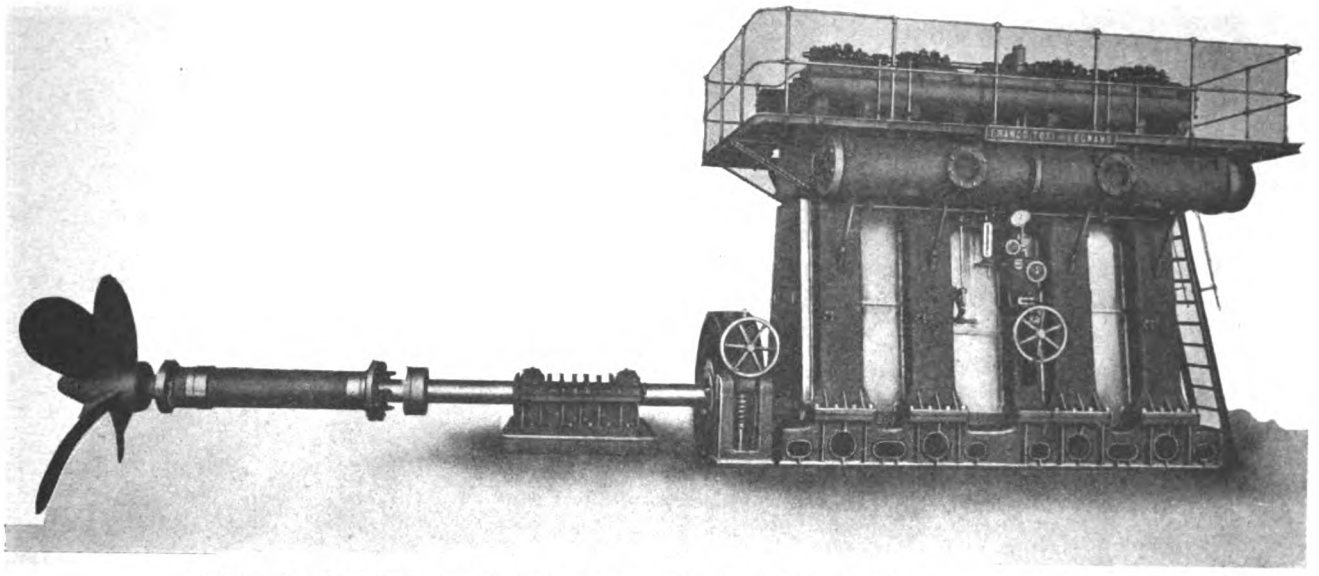

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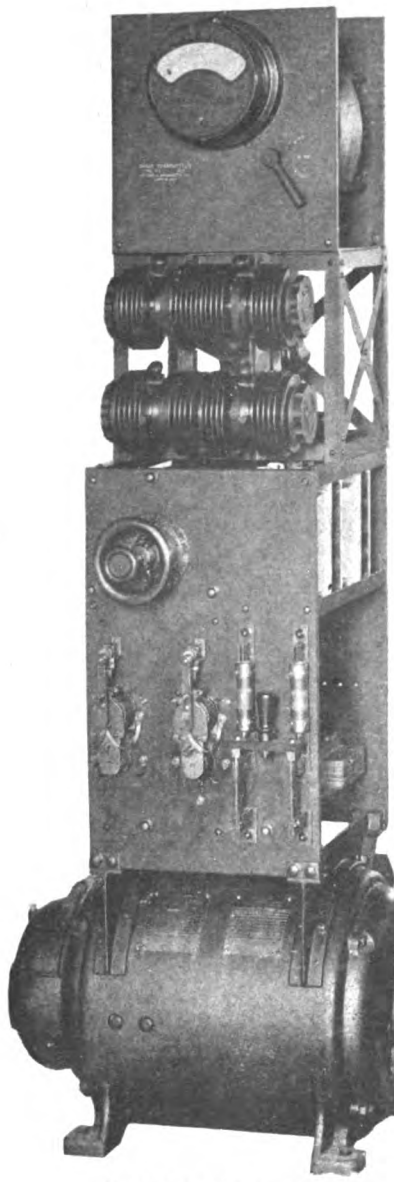

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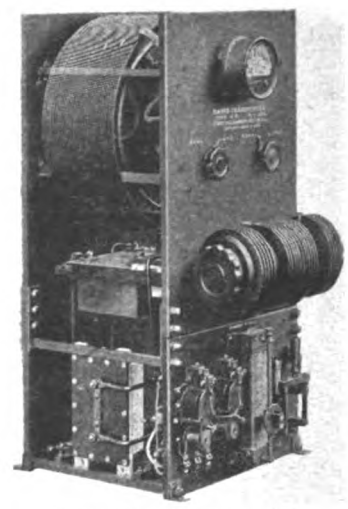

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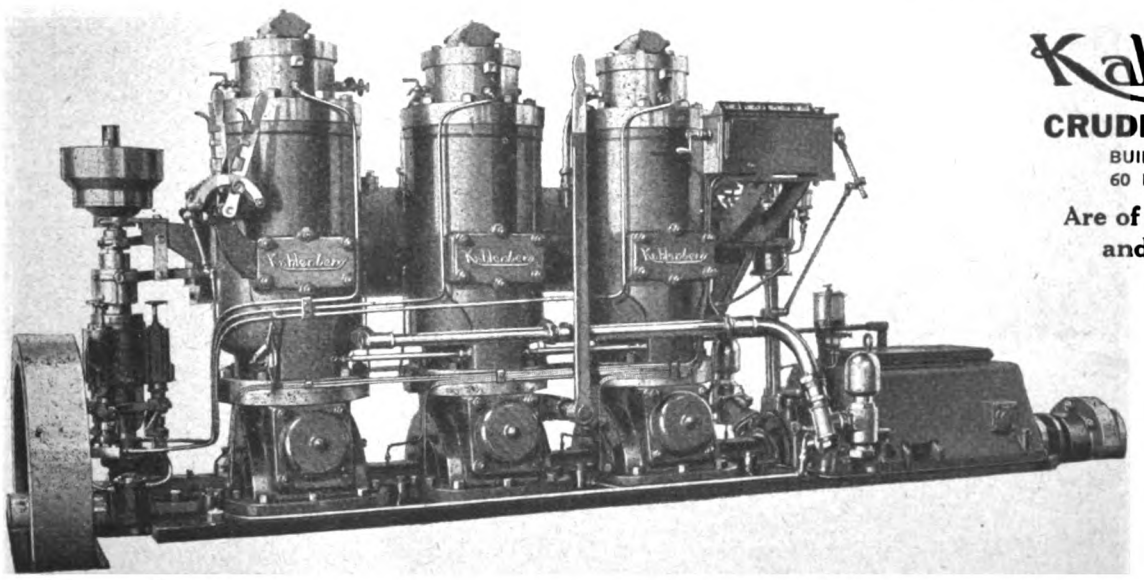

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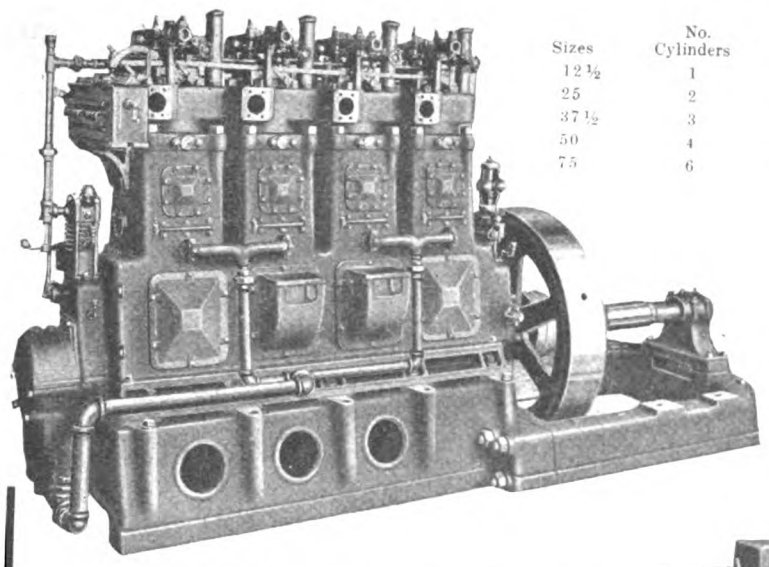
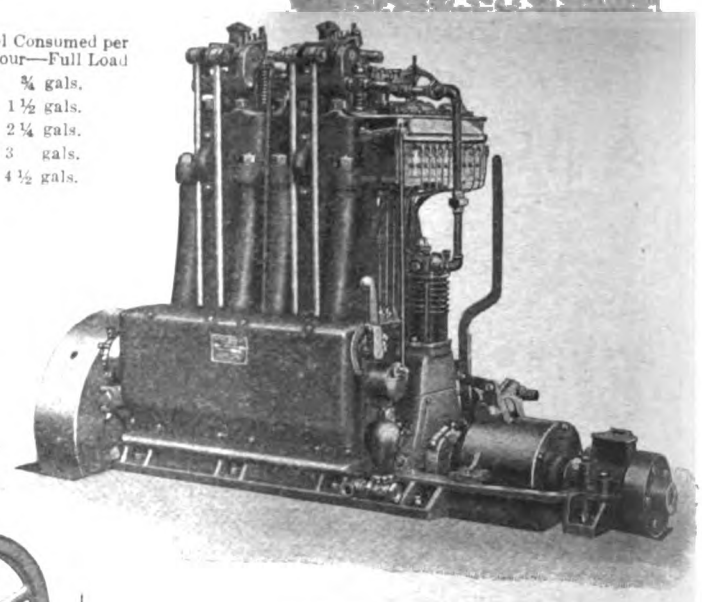
Sizes	No. Cylinders	Weight	Fuel Consumed per Hour—Full Load
12½	1	2200 lbs.	¾ gals.
25	2	3400 lbs.	1½ gals.
37½	3	4100 lbs.	2¼ gals.
50	4	4800 lbs.	3 gals.
75	6	7500 lbs.	4½ gals.



Bore 6¾ in.
Stroke 9 in.
R. P. M. 425.



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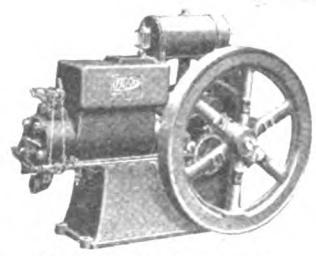

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For hoists, cranes, winches, pumps, lighting sets, etc. 2½, 5 and 7 H. P.

MARINE

All cylinders are 12½ B. H. P. each. Parts interchangeable which are built up in Vertical Stationary and Marine Engines, differing only in base plate, cam shaft, crank shaft and size of reverse gear.

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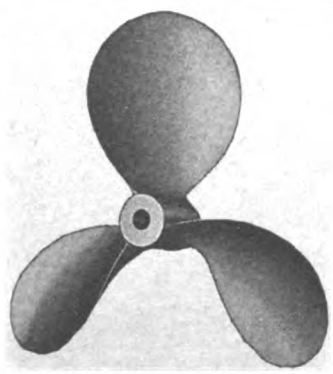
From 8 in. to 20 ft. in Diameter. Made of Hyde Manganese Bronze. The Most Efficient Propellers Ever Designed.



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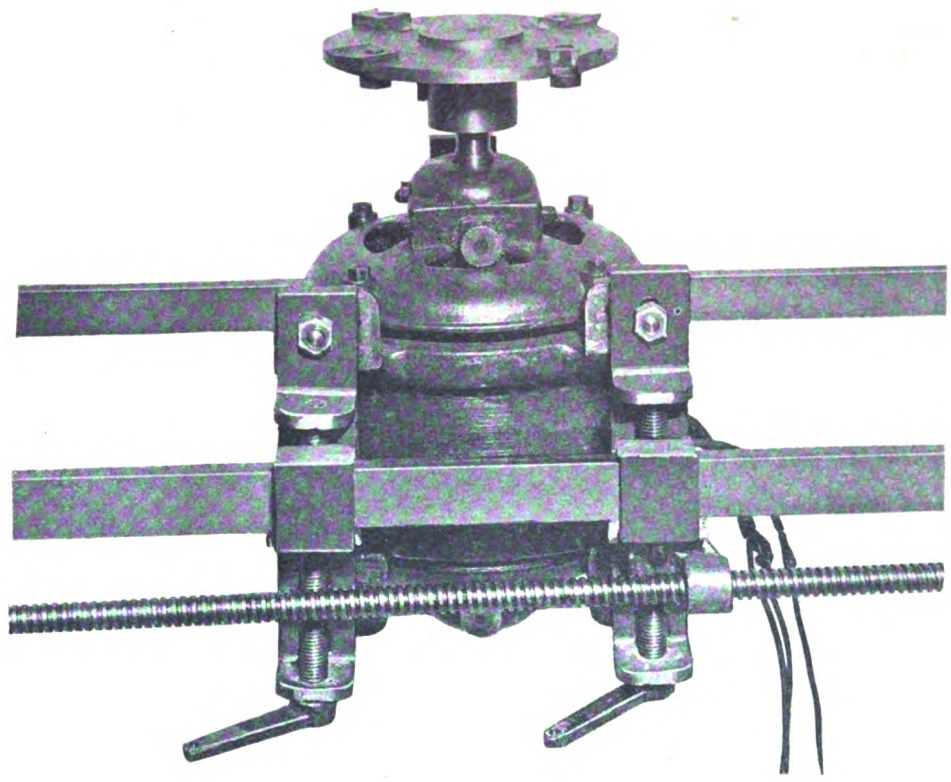

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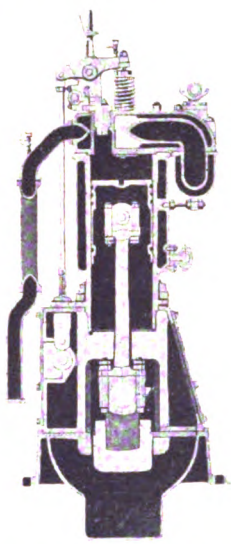

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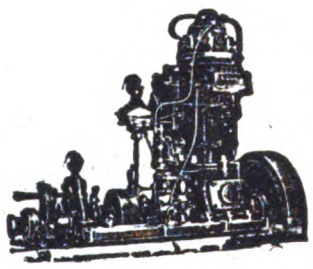

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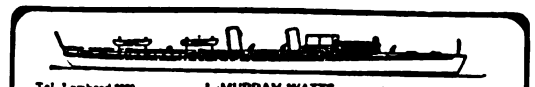

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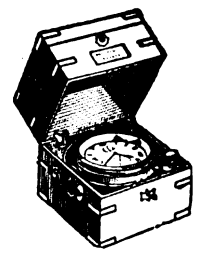

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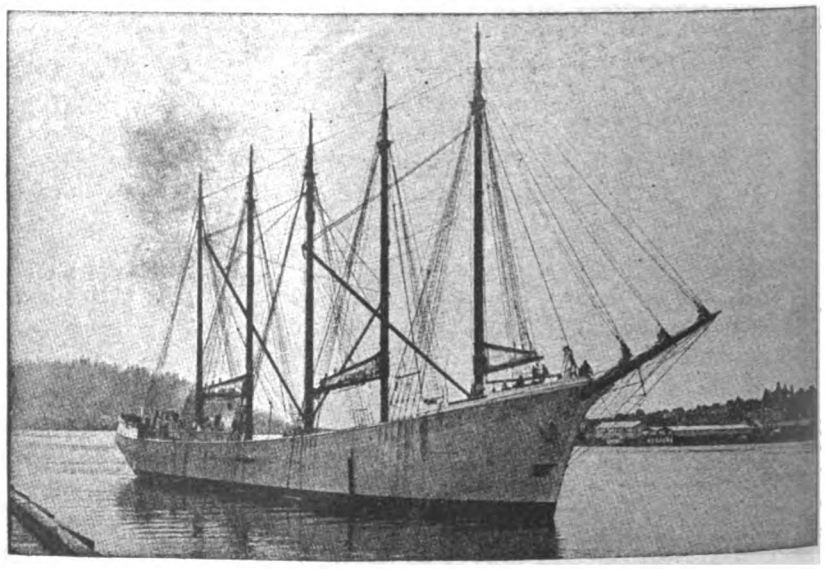

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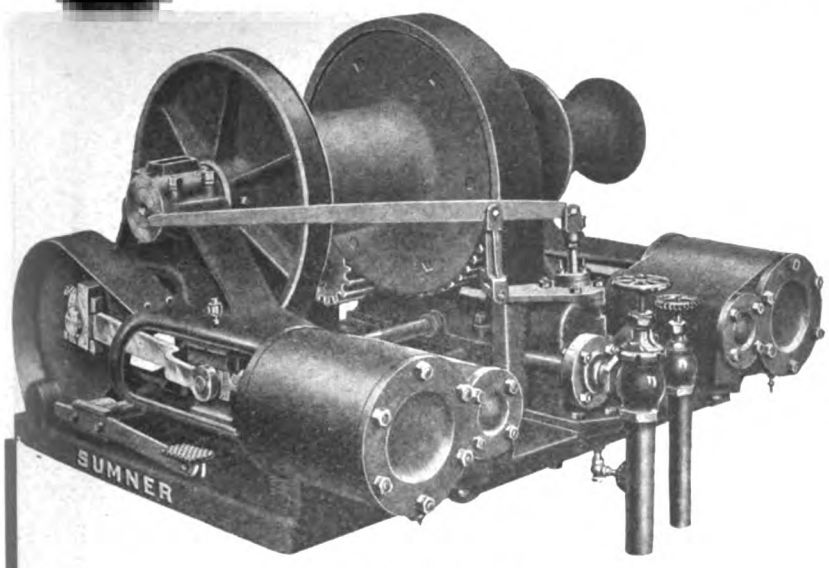

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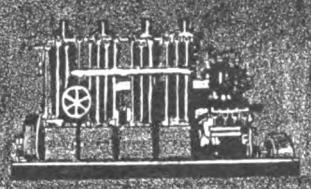

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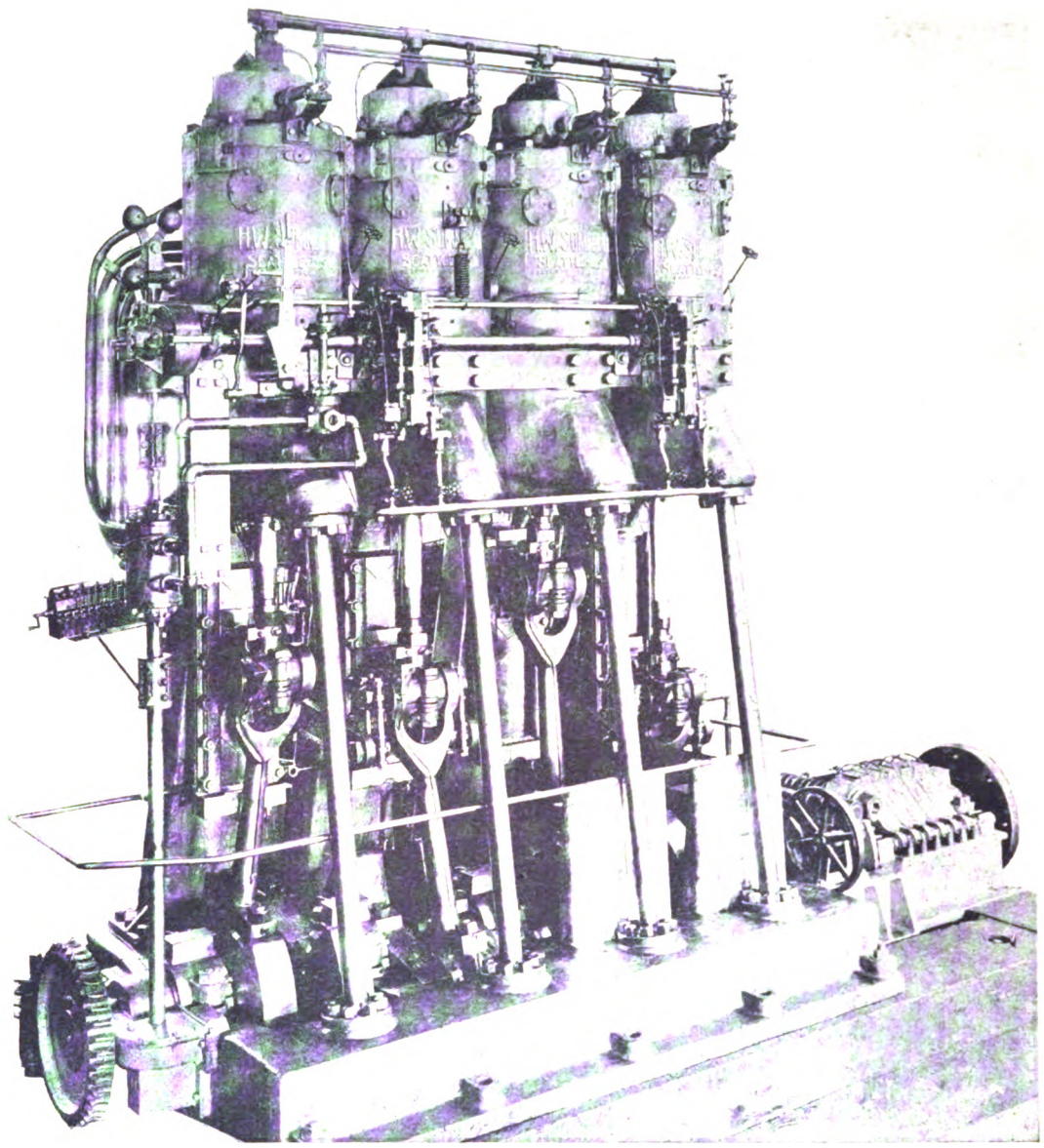

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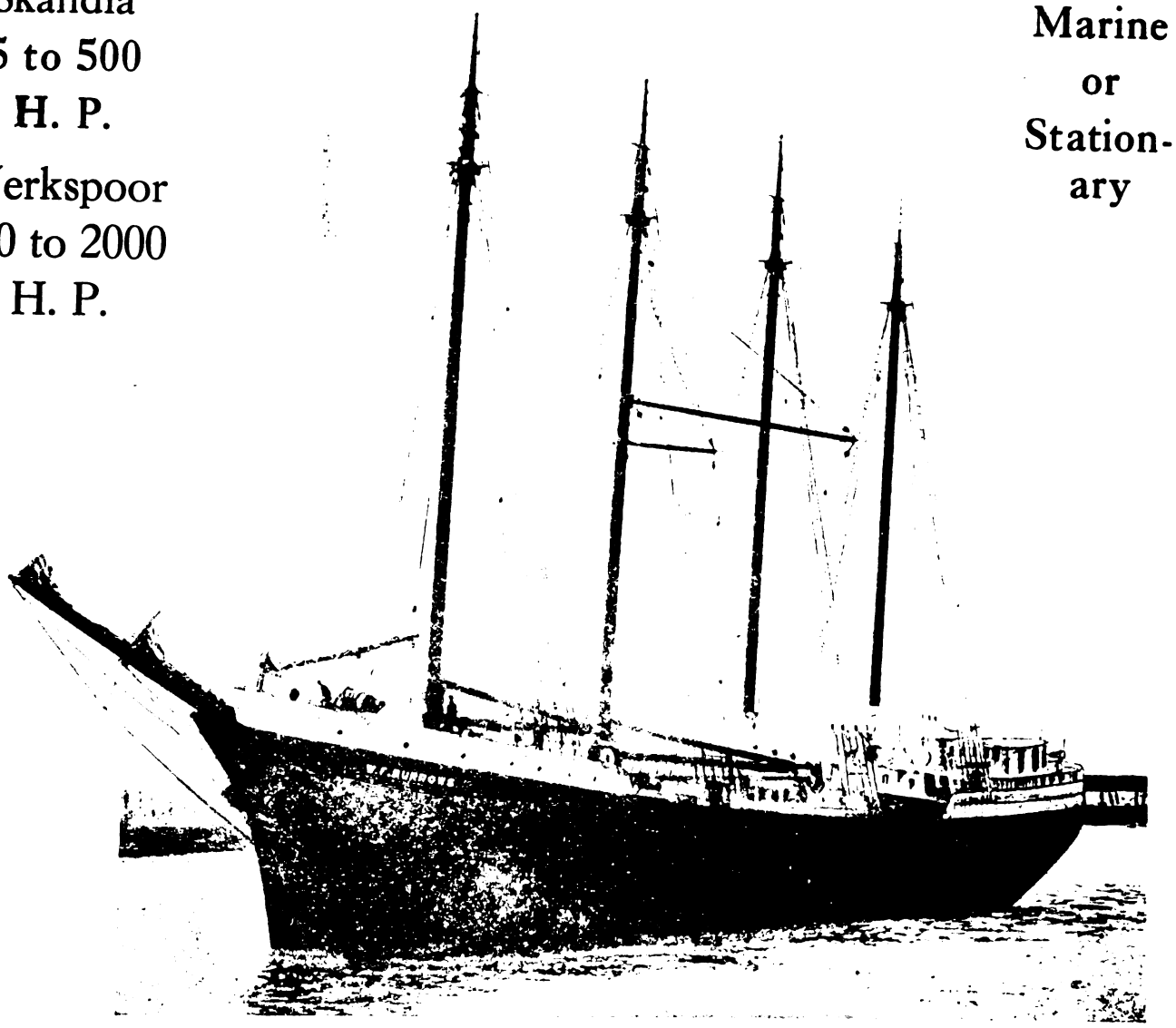

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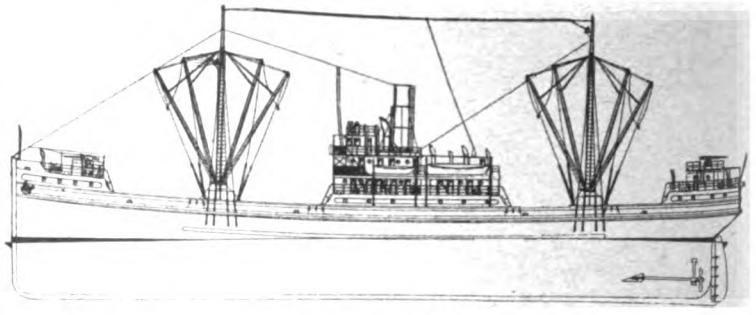

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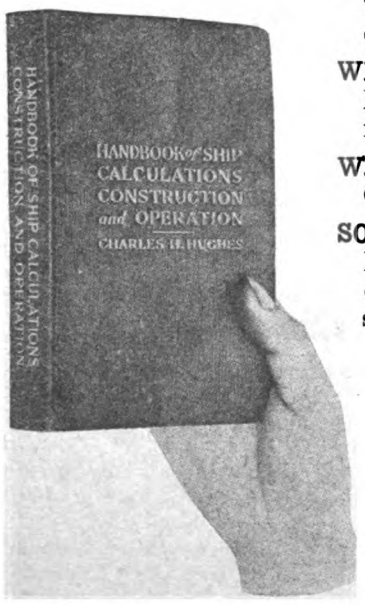

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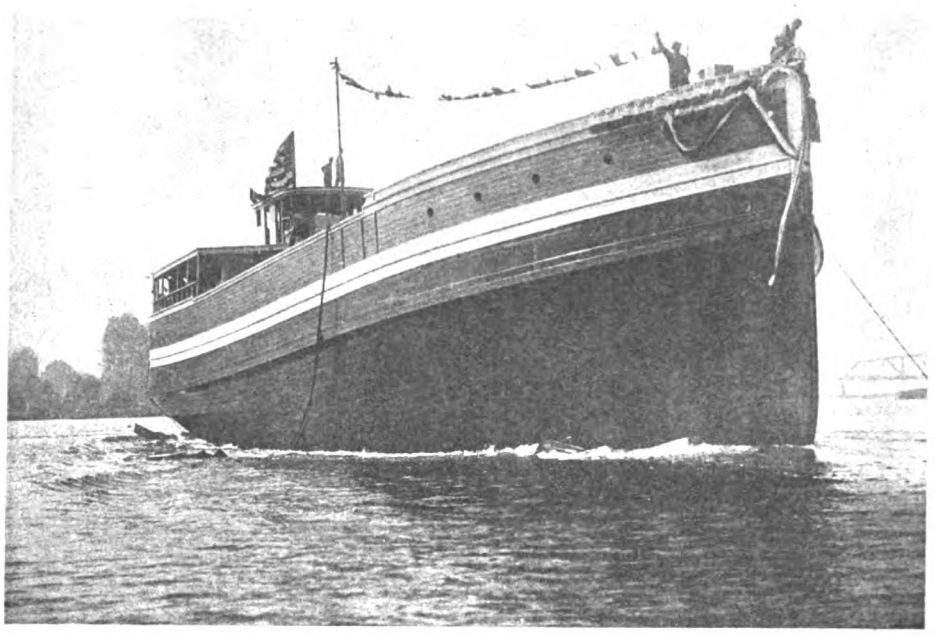

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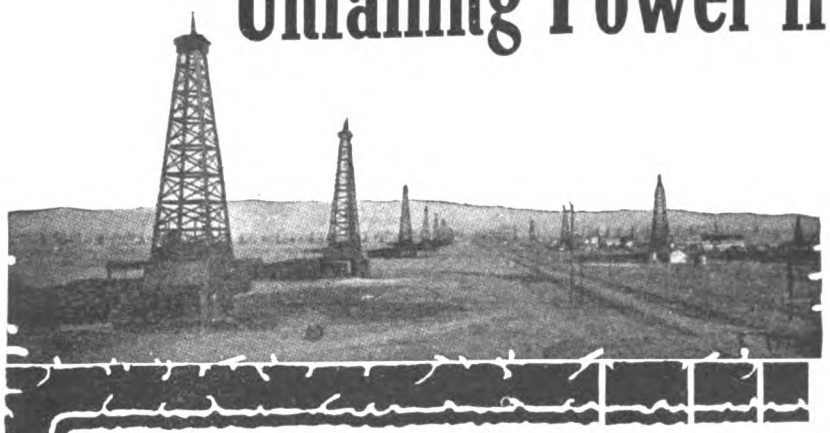

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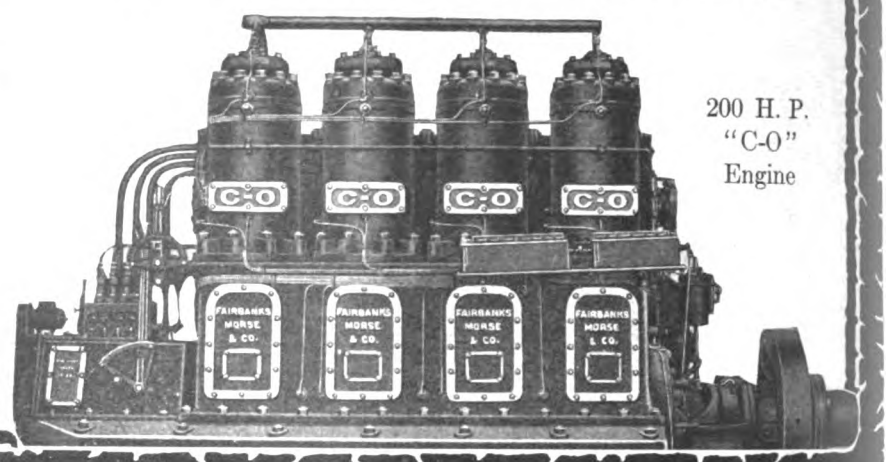

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CORRECT FUEL
FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil.

Fuel oil for the Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
For Diesel and Semi-Diesel Engines

Operators of Diesel engines should note that if the fuel contains too large a percentage of high boiling constituents complete combustion with the fuel will not be realized. The products of an incomplete combustion are tar, asphaltum and free carbon. These products form a sticky deposit on the valves which prevents their proper operation. This results not only in poor compression and loss of power, but in an excessively high fuel consumption. Tar and asphaltum also deposit themselves behind the Piston rings, which causes them to score the cylinders and prevent efficient lubrication of the Piston. This sticking of the Piston is often blamed on the Lubricating Oil.

"Safety first" dictates that the flash point should be high enough to insure safety to oil in storage or in the bunkers.

In addition the Fuel Oil should have a fluidity that permits it to be readily pumped at all working temperatures.

Uniformity is necessary in fuel oil, so as to eliminate the alteration of valves and air pressure for each run of fuel oil.

To produce a fuel oil that embodies all these necessary qualities it requires an intimate knowledge of the Diesel engine itself and the refining experience and equipment to turn out fuel oil to specifications.

Calol Fuel Oil is the result of scientific investigation and a carefully worked out process of preparation.

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

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CORRECT LUBRICATION
For Diesel and Semi-Diesel Engines

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surface-Ignition, Semi-Diesel, or Diesel type—we recommend

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These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service. At points named above and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

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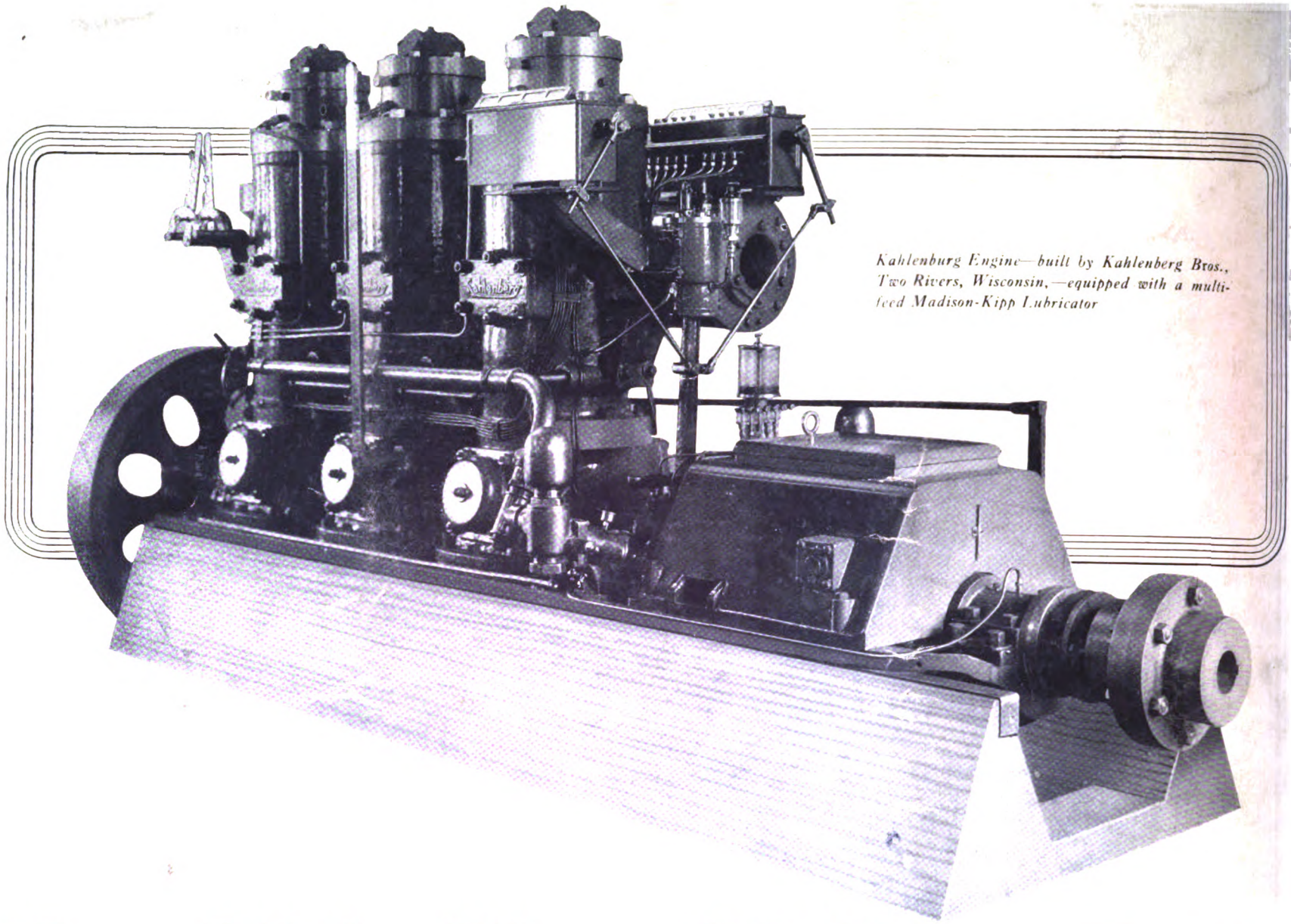

Kahlenburg Engine—built by Kahlenberg Bros., Two Rivers, Wisconsin,—equipped with a multi-feed Madison-Kipp Lubricator

They Make Your Oil Keep Faith

In the proper lubrication of Diesel and hot-surface types of motors there are two factors so important that they compel consideration.

The first of these is the condition of the lubricant when applied to cylinders and bearings.

The second is faithful and unfailing delivery of oil.

Madison-Kipp Lubricators take perfect care of the latter because their Kipp Valveless Principle insures unfailing supply even against pressures of 133 atmospheres.

No other lubricator employs or can employ this powerful pumping principle.

Nor has any other lubricator the facilities of the Madison-Kipp for delivering economically to the cylinders oil constantly in the condition in which you buy it.

Unless your oil is delivered in this condition, you might as well use the poorest grade of lubricating oil for your motor.

The low-grade fuel used in Diesel and hot-surface types of motors pollutes oil after it has once been used.

If this carbon and sediment-fouled lubricant is allowed to seep into a crank-case sump and to be pumped back into the cylinders, gumming, fouling, and grinding wear are sure to follow.

Even if it is carefully strained, it will not lubricate as it did at first because use destroys the durability of oil.

There is one solution, the Madison-Kipp way of pumping only "live" oil to the motor and preventing waste by its easily made and accurate feed-adjustments.

In cross-head types of motors it may be possible to use "live" Madison-Kipp fed oil for the motors only, relying on strained crank case oil for bearing lubrication.

In trunk-piston types the Madison-Kipp "live" oil system is indispensable for both.

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Madison-Kipp Lubricators

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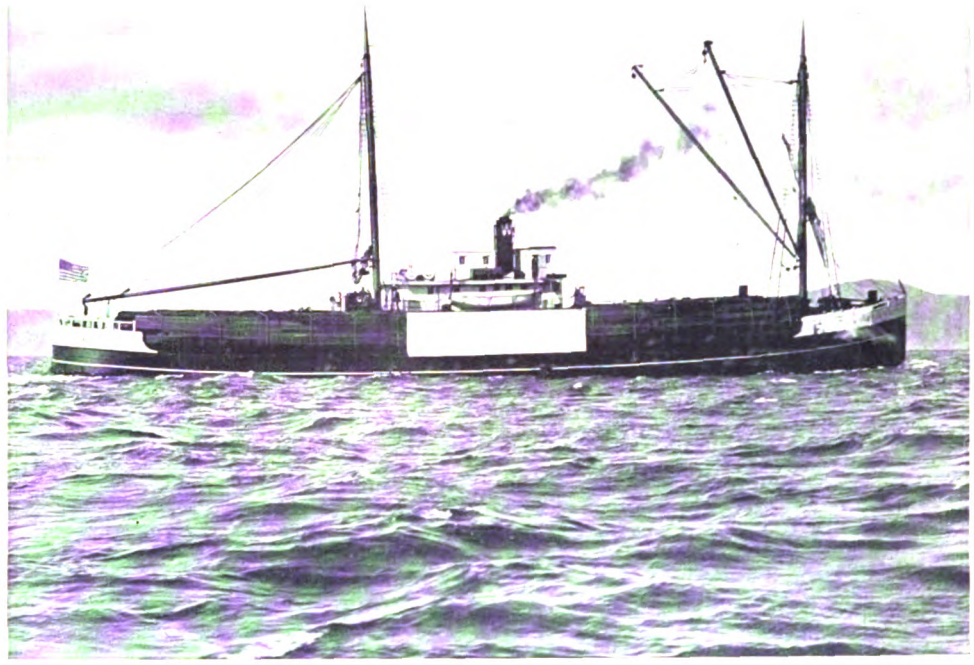

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E. K. Wood Lumber Company's M. S. "Sierra" equipped with two 320 b. h. p. Model "M-11" "Bolinder" Fuel Oil Engines, leaving San Francisco for Valparaiso with 1,250,000 feet of lumber and sufficient fuel for round trip.

Craft under construction and to be fitted with Bolinder Engines in the United States alone aggregate over 130,000 tons; Bolinder Engines now in service, over 12,000.

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THE ENGINE THAT IS NOT A SEMI-DIESEL

THE ENGINE THAT IS THE BOLINDER

THE STANDARD FOR HOT-BULB ENGINES

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The Motorship "Sierra" recently completed a very fast trip from San Francisco to Antofagasta and return. The ship was absent from San Francisco just sixty days, during which time she made several stops in Chile, discharged her cargo and took on a cargo of nitrate. The captain says that he even beat the mail boat up the Coast from South America, because letters he mailed at Callao did not reach San Francisco until after his arrival.

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The SOCIETY has at present at work, in its own 28 ESTABLISHMENTS and other associated CONCERNS as hereunder enumerated, about 50,000 hands, men and women, and is capable of building and is building:—

1st—Warships and mercantile vessels of all kinds and sizes from big Super-dreadnoughts and ocean liners to destroyers, torpedo boats, submarines, cargo steamers, tug boats, motor boats, etc.
2nd—Diesel marine oil engines up to 2,000 b. h. p., also marine steam propelling engines, both reciprocating and turbine engines with and without gearing.
3rd—Steam boilers, both water-tube and cylindrical, of all types and sizes.
4th—Locomotives and tenders complete, and Machine Tools.
5th—Armour plates, guns, armoured turrets complete, ammunition complete, metallic cartridges and casings.
6th—Auxiliaries for propelling machinery, and all kinds of auxiliary machinery for ships, such as steering gears, capstans, winches, distilling condensers, and screw propellers.
7th—Dynamos and all electric appliances, auxiliary electric machinery both for ship and land service, electric gear for turrets and guns, elevators, steering gears, electric capstans and winches, cranes and electric propelling machinery.
8th—Aeroplanes and their motors.
9th—Steel, cast iron and bronze castings of all varieties and sizes.
10th—Steel forgings of all kinds and sizes, special steels, and Files.
11th—Boiler steel tubes, steel, iron, copper and brass pipes.
12th—Furniture of all descriptions, both wood and metallic, for warships, liners and mercantile vessels.

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2.	Locomotive Construction Works	SAMPIERDARENA
3.	Artillery and Big Gun Works	SAMPIERDARENA
4.	War Munition Works	SAMPIERDARENA
5.	Aeroplane Motor Works, San Martino	SAMPIERDARENA
6.	Cast Steel Foundry	CORNIGLIANO LIGURE
7.	Armour Plates and Forging Plant	CORNIGLIANO LIGURE
8.	Oxygen and Hydrogen Production Plant	CORNIGLIANO LIGURE
9.	New Artillery and Big Gun Works	CORNIGLIANO LIGURE
10.	Electric Products Plant	CORNIGLIANO LIGURE
11.	Bronze Foundry	CORNIGLIANO LIGURE
12.	White Metal and Alloys Foundry	CORNIGLIANO LIGURE
13.	Savoia Shipyard	CORNIGLIANO LIGURE
14.	Internal-Combustion Engine Works	CORNIGLIANO LIGURE
15.	Aeroplane Works No. 1 (Marine Hangars)	BORZOLI (Mare)
16.	Aeroplane Works No. 2	BOLZANETO
17.	Aeroplane Works No. 3	TORINO (Corso Peschiera 251)
18.	Tube Mills	FEGINO (Val Polcevera)
19.	Projectile-Case Works	FEGINO
20.	Naval Shipyard	SESTRI PONENTE
21.	Saw Mill and Boat Yards	VOLTRI
22.	Ammunition Works	SESTRI PONENTE
23.	Cast Iron Foundry	PEGLI
24.	Fire Brick Plant	STAZZANO (Serravalle Scrivia)
25.	Genoa Shipyards	MOL GIANO (Porto di Genova)
26.	Iron Mines	COGNE (Valle d'Aosta)
27.	Electric Furnaces for Steel and Pig Iron	ROLLING MILLS: Steel Plant, Aosta
28.	Special Alloys Plant	AOSTA

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1.	Shipyard and Works, Savoia	CORNIGLIANO LIGURE
2.	Shipyard and Works, Fiat San Giorgio	SPEZIA
3.	Internal-combustion Engine Works, Fiat San Giogio	TORINO
4.	Ore Mines	COGNE (Val d'Aosta).
5.	Italian National S.S. Company	GENOVA
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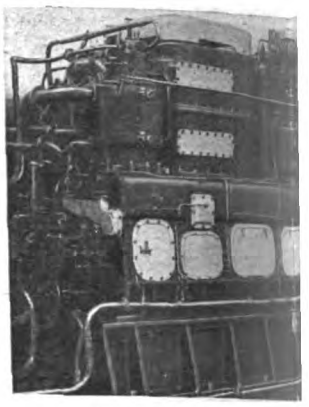

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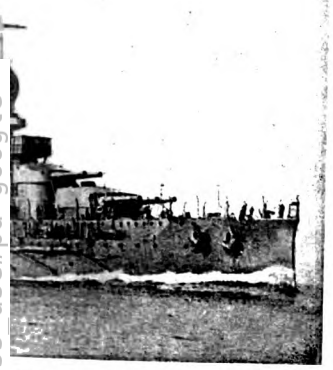

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Complete Construction of War and Merchant Ships. Cargo and Passenger Vessels of any Capacity. Ships equipped and repaired.

Heavy-Oil Marine Motors, type Fiat-San Giorgio, for War and Merchant Ships of any capacity.

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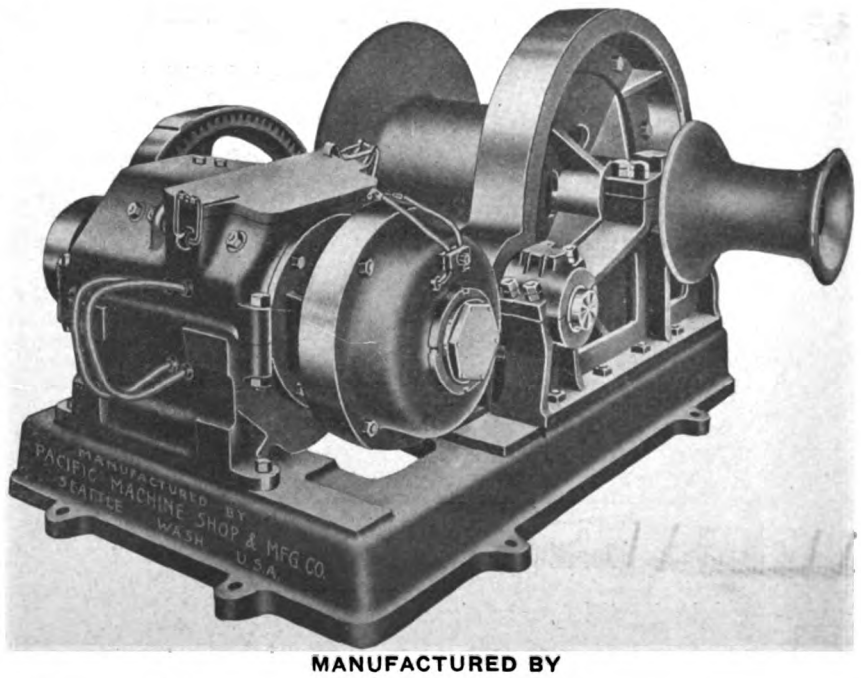

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Heavy loads can be handled slowly, light loads can be handled fast.

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Any load can be held suspended for any length of time without danger of dropping.

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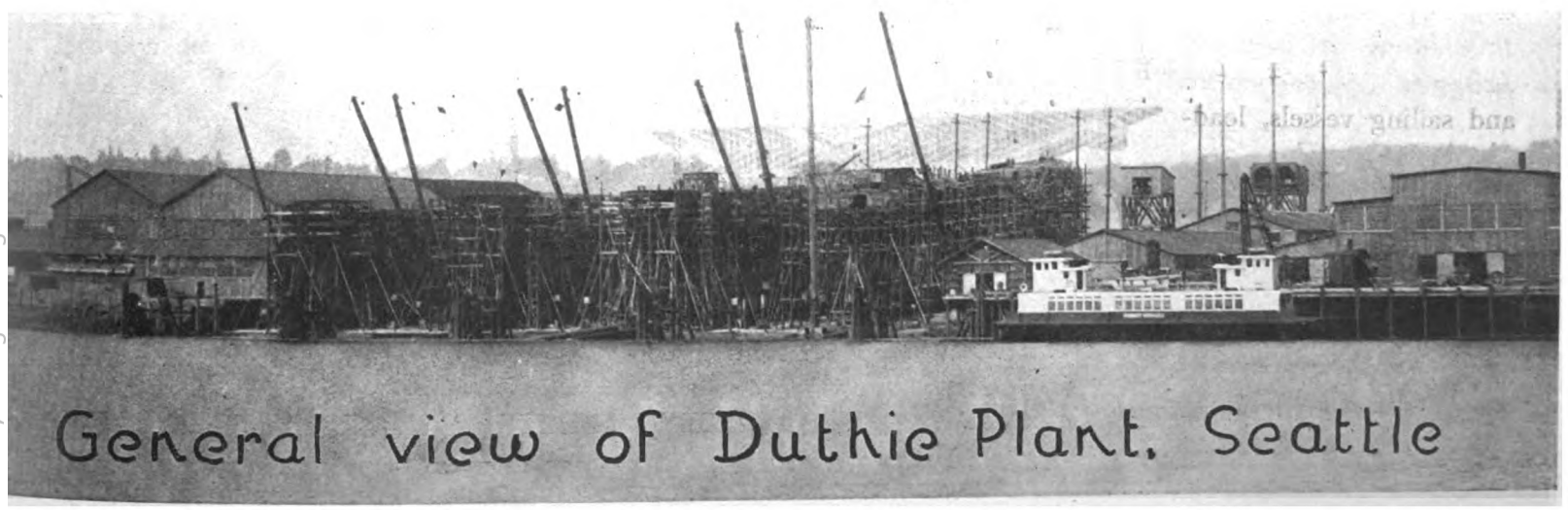

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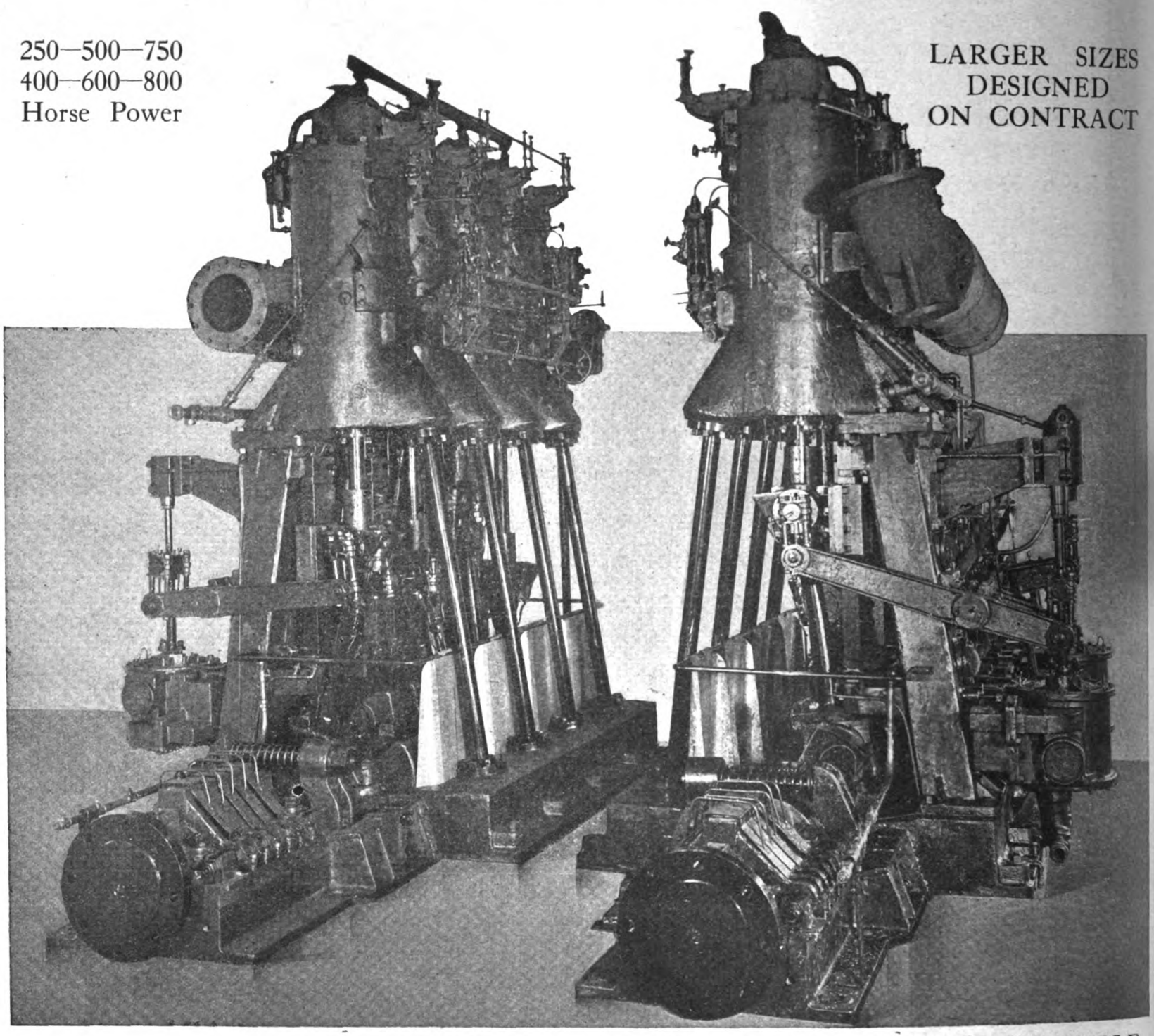

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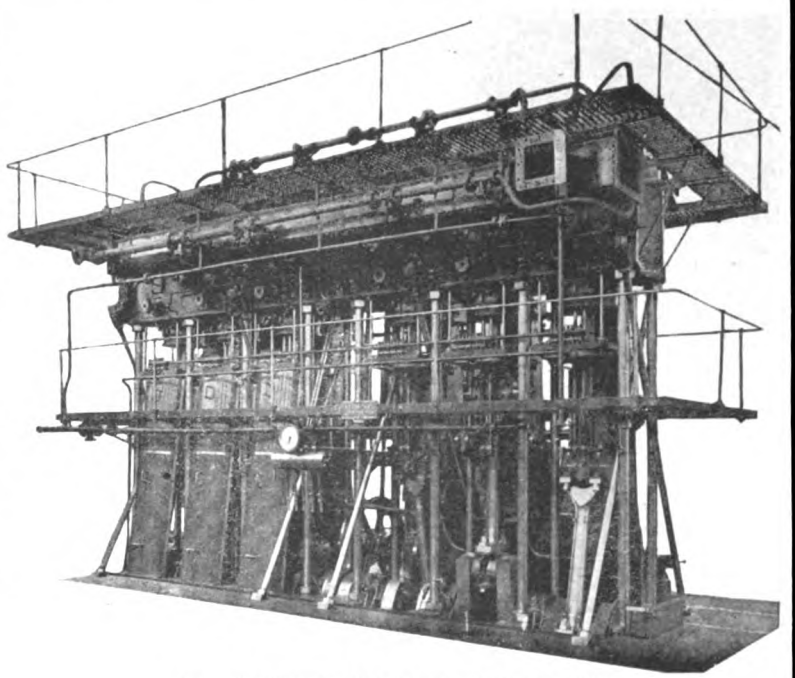

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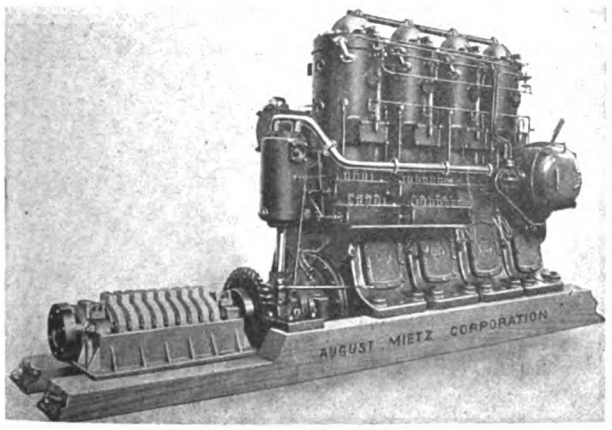

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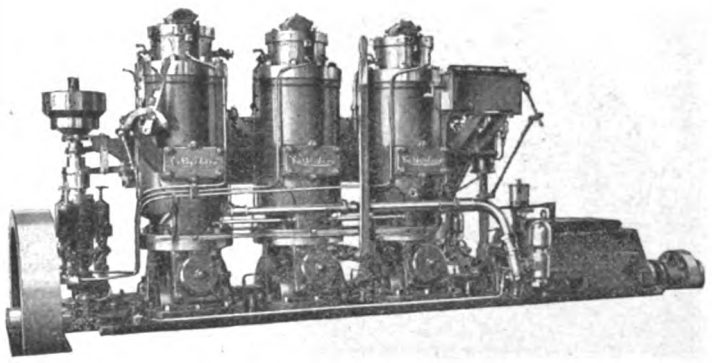

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Operates on any of the crude fuel oils or kerosene.
Absolutely reliable. Fuel consumption .55 per H. P. hour.

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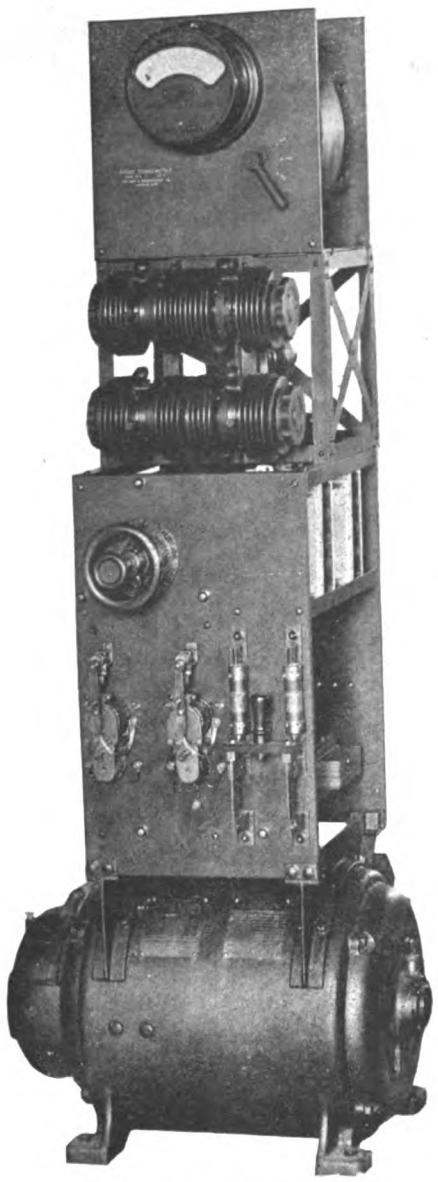

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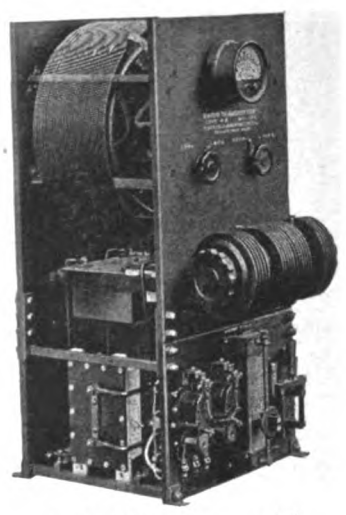

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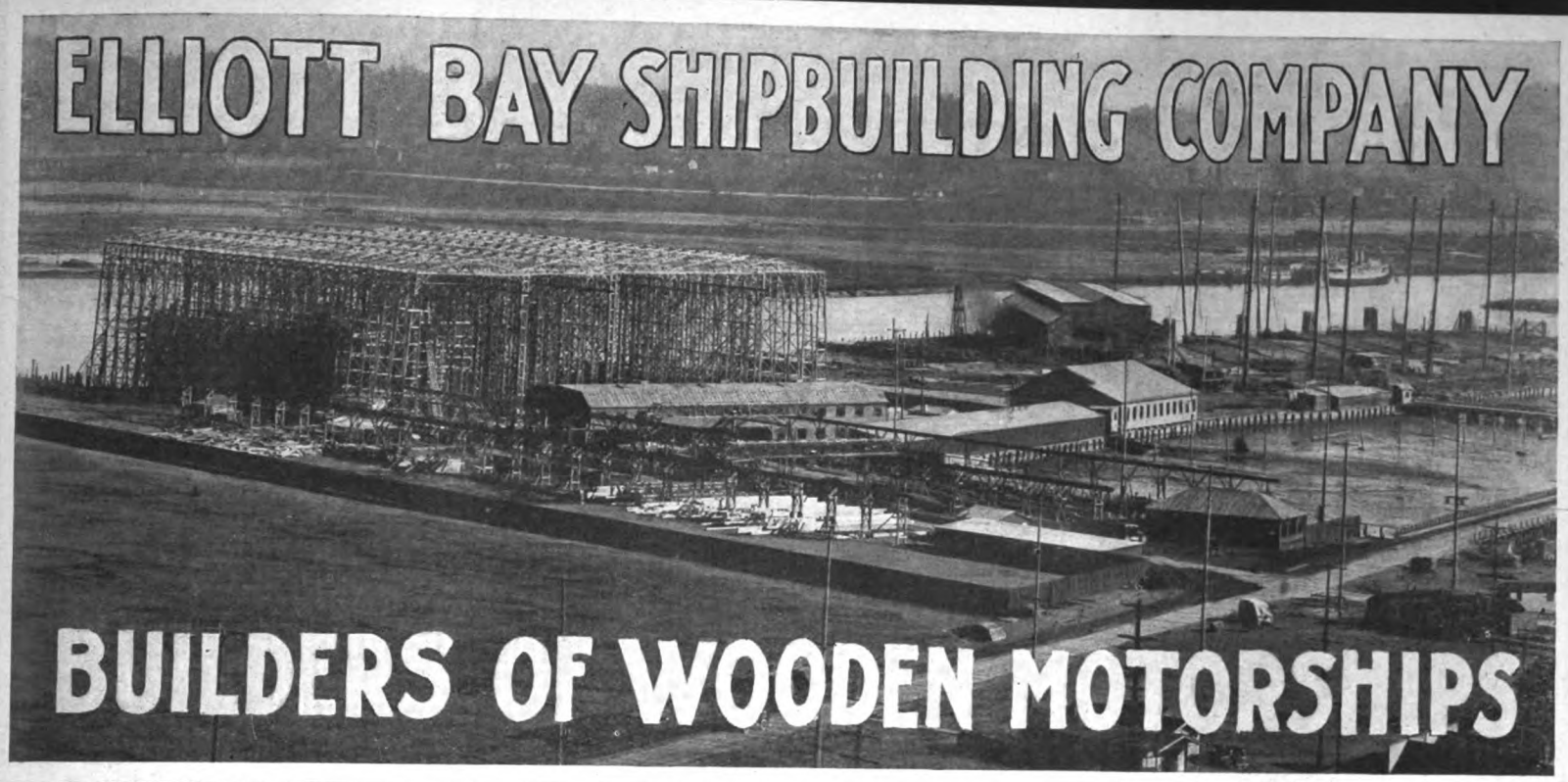

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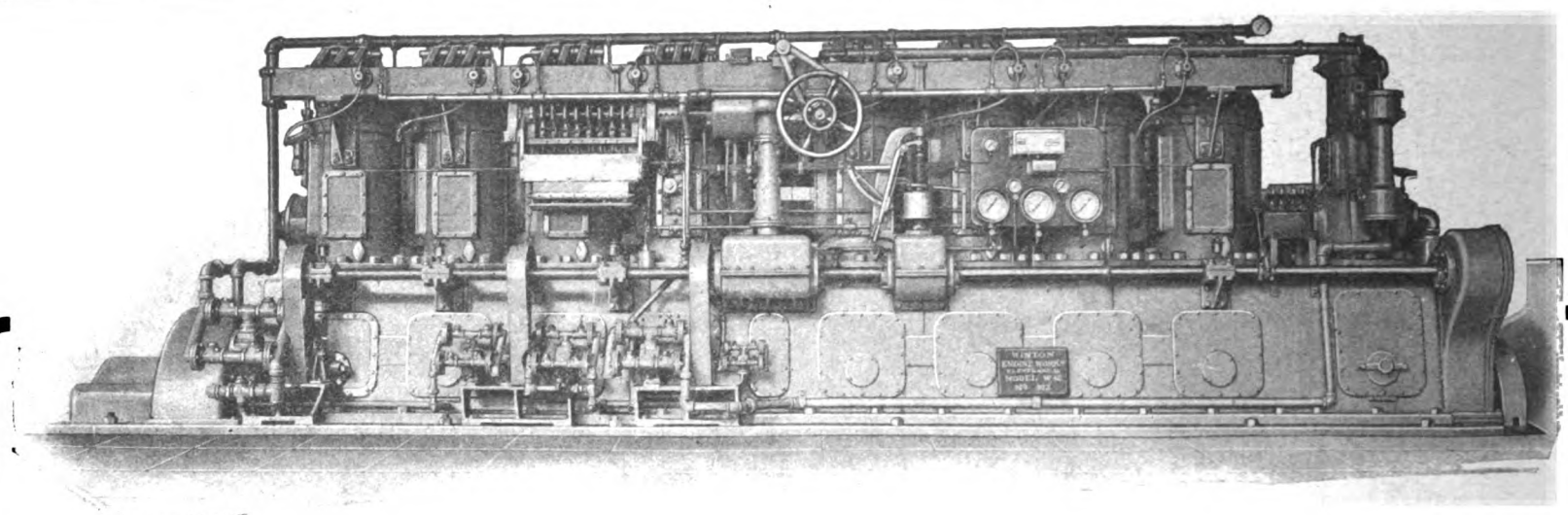

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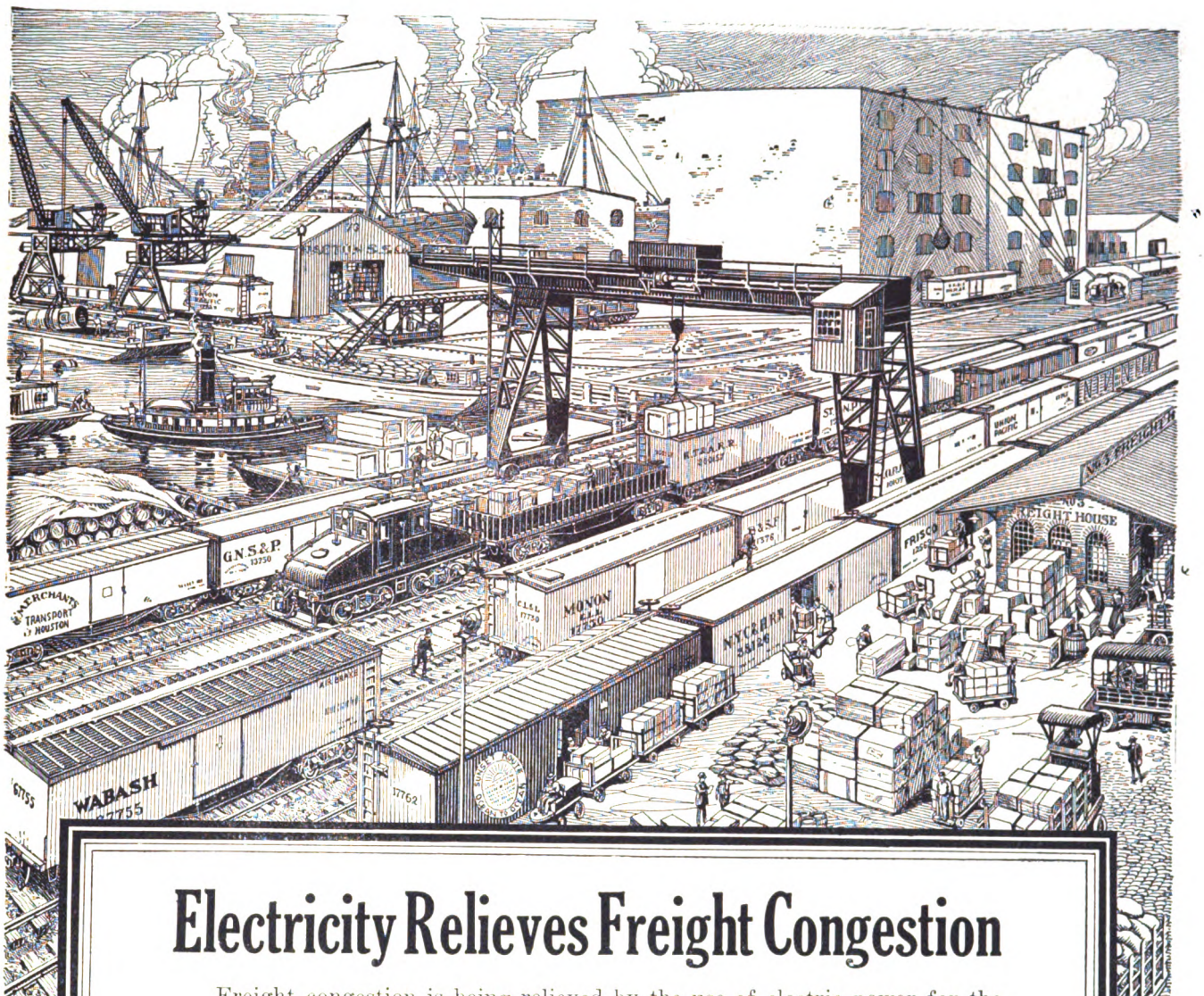

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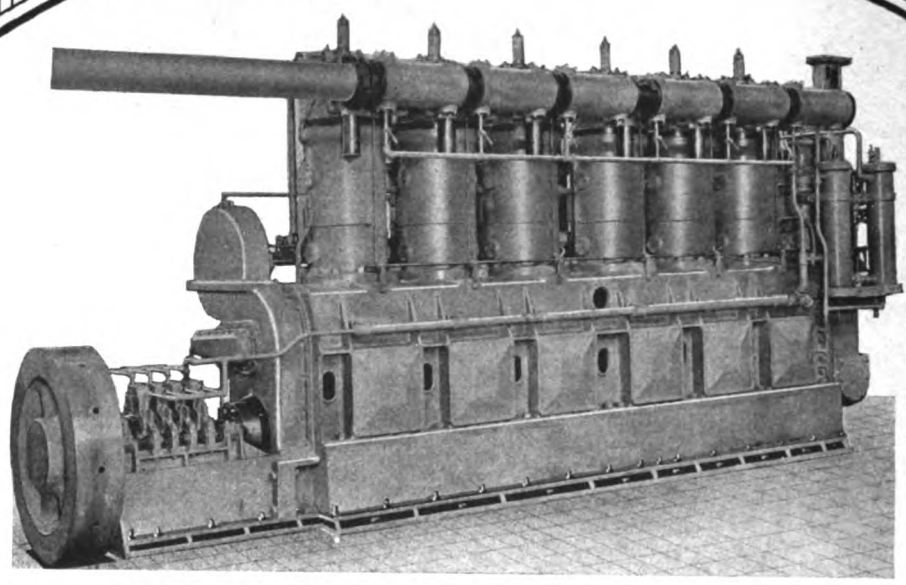

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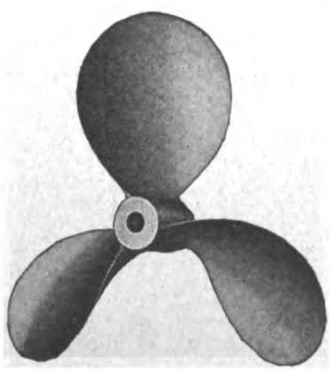

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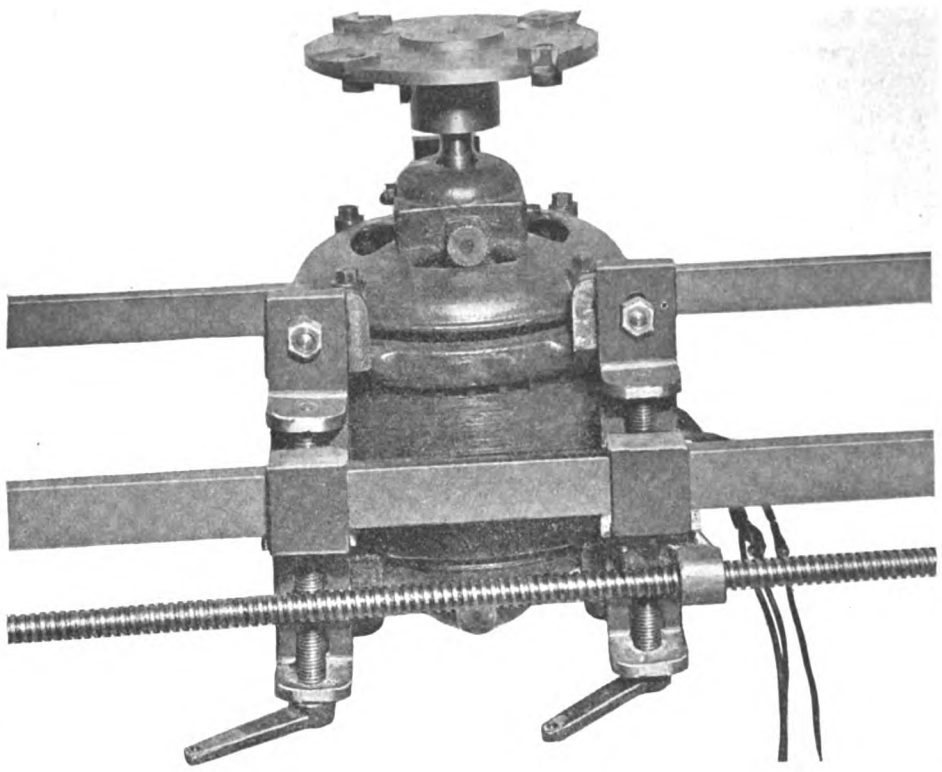

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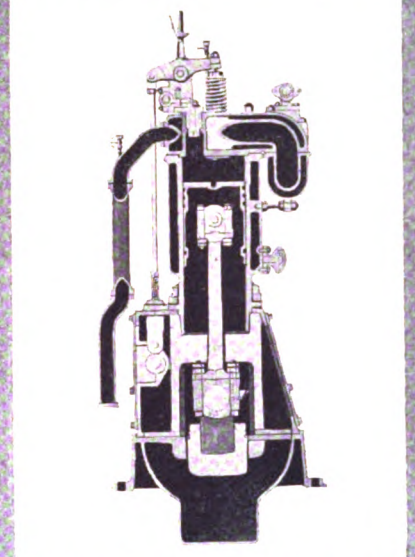

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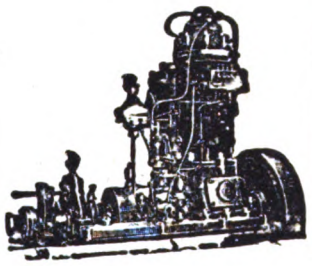

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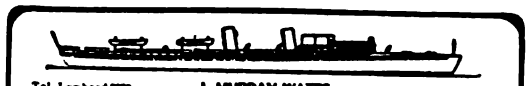

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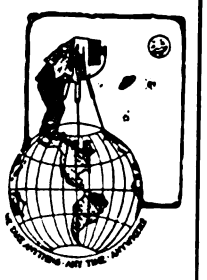

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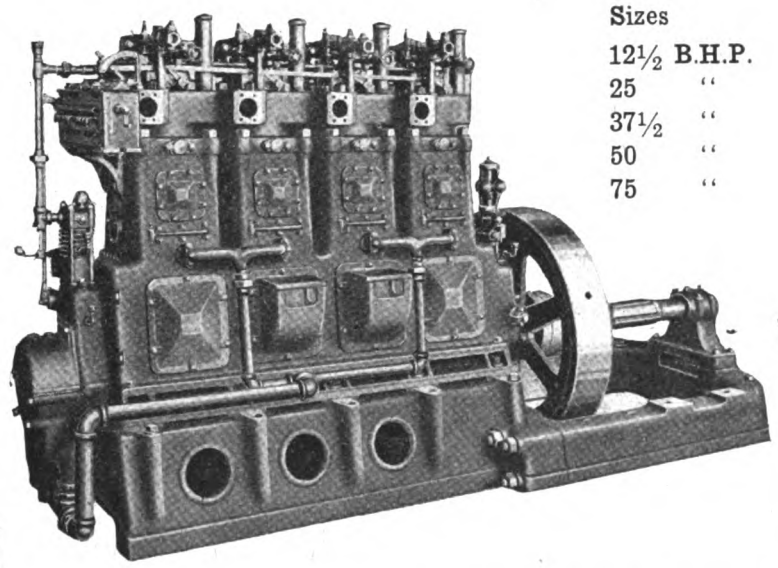

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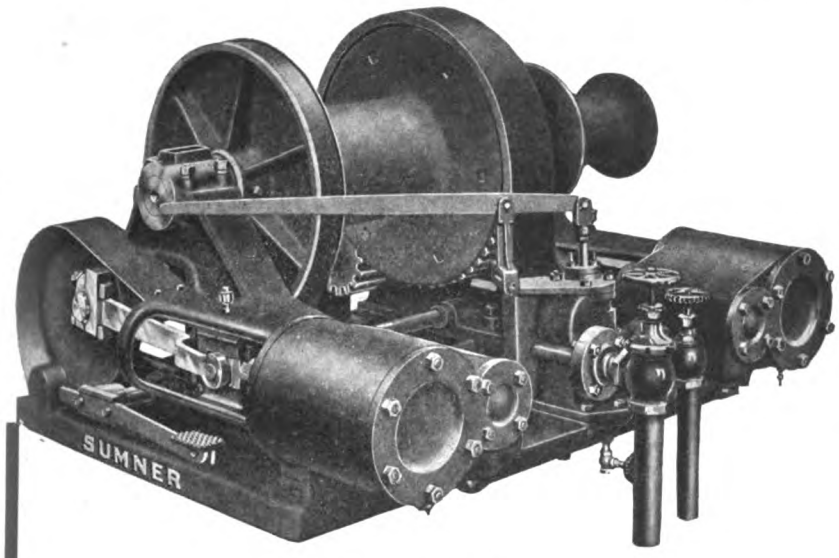

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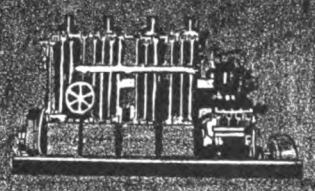

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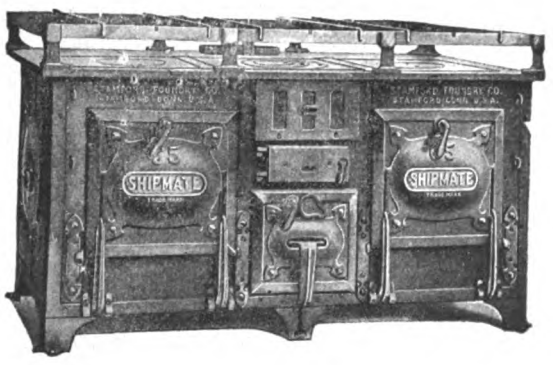

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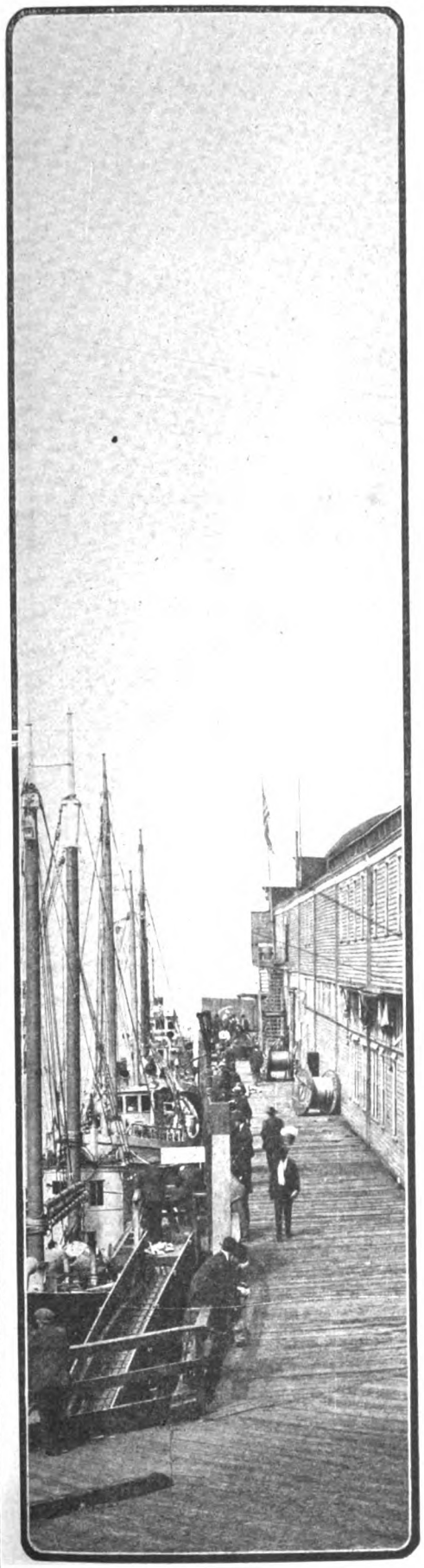

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SHIPS LIGHTS

That the Shipping Board Specify

RUNNING LIGHTS
ANCHOR LIGHTS
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And No Ship Is "Class A" Without a

SHIPMATE RANGE

All Sizes For Every Purpose

PLYMOUTH CORDAGE **ANCHOR CHAIN**
BALDT AND PROVIDENCE ANCHORS
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In Fact Old Established Lines of Ship Chandlery That You Can Depend Upon

MARINE ENGINES

FRISCO STANDARD—Heavy Duty
FRISBIE—Medium Duty
FERRO—Light Work

We Have an Engine for Every Service

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PIER 8, SEATTLE, U. S. A.

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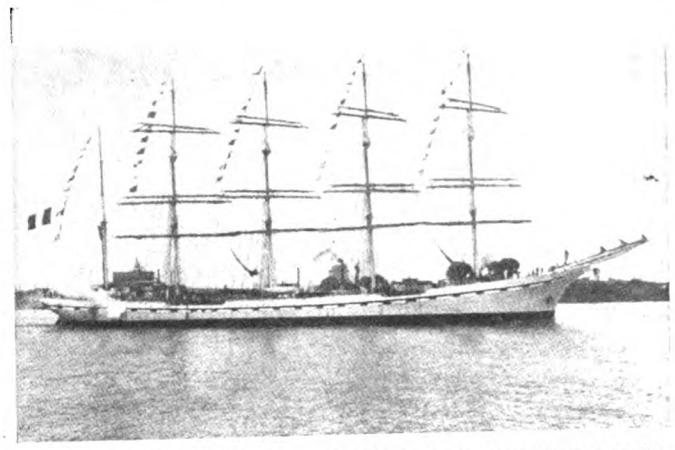
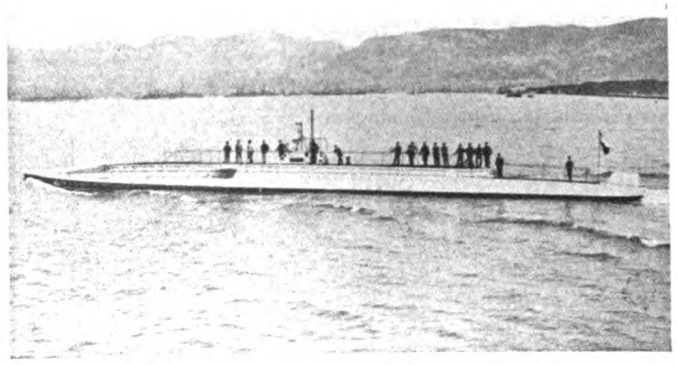


"LA FRANCE," FITTED WITH TWO 900 B. H. P. SCHNEIDER-DIESEL MARINE ENGINES

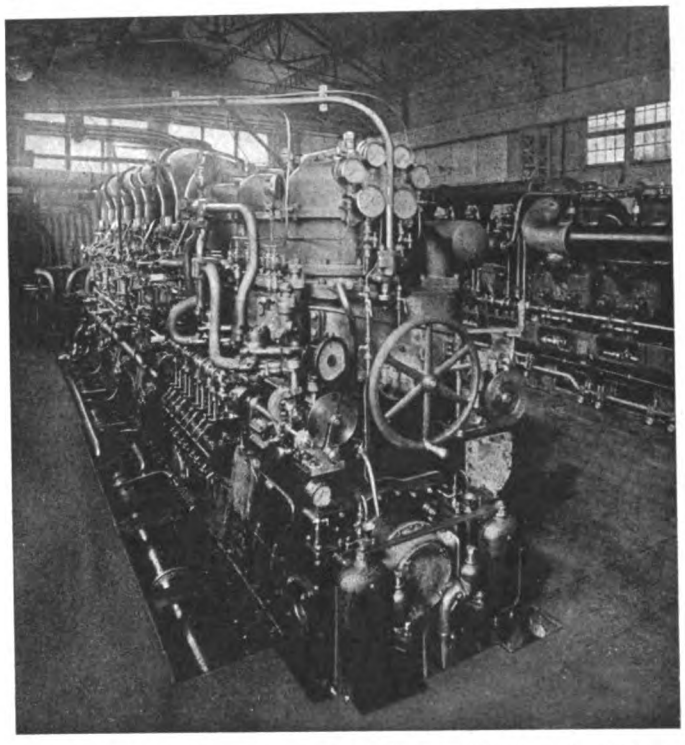


A LARGE SUBMARINE BUILT AND DIESEL-ENGINED BY SCHNEIDER & CIE.

POWERS PER ENGINE

700
1500
and
2400
H. P.

For ONE Motor
(Submarine Type)



A SCHNEIDER 1500 H. P. DIESEL MARINE ENGINE FOR SUBMARINES

LIGHT WEIGHT
(Only 46 lbs. per B. H. P.)

STRONGLY BUILT

EFFICIENCY
(0.400 lb. of Fuel Oil per B. H. P.)

Two and Four-Cycle Diesel Engines for War and Merchant Ships

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Operating on Low-Gravity Crude or Fuel Oils

NOW BEING BUILT ON THE PACIFIC COAST

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5 to 500
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H. P.

Marine
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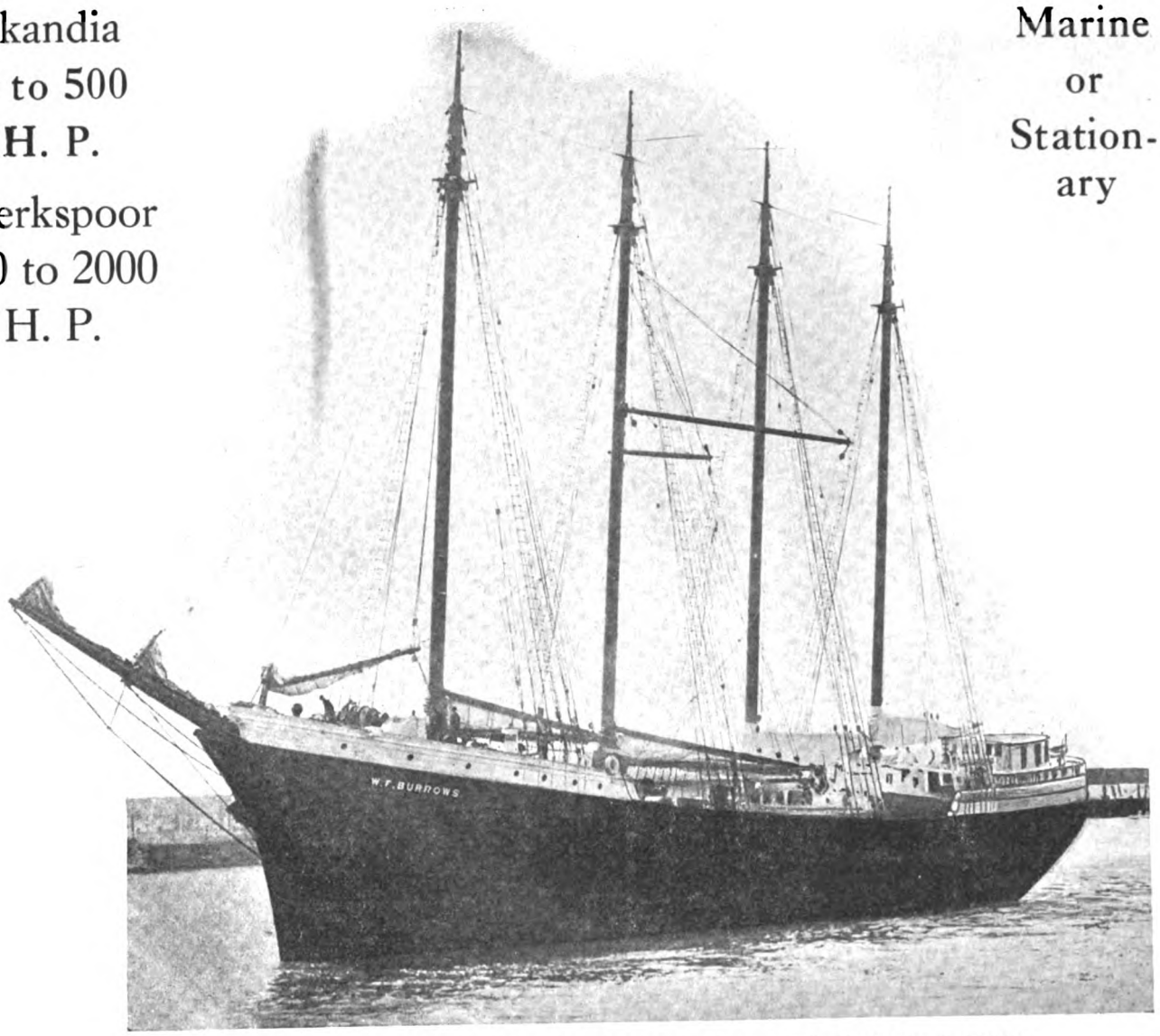

MOTORSHIP "W. F. BURROWS," OWNED BY LIBBY, McNEILL & LIBBY
Used in Transporting Canned Salmon from Alaska to Seattle
2 240 h. p. Skandia Oil Engines. Length 235 ft.; Beam 40 ft.; Depth 20 ft.

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Pacific Coast Builders of Werkspoor Diesel Engines

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Seattle, Wash.

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Builders of

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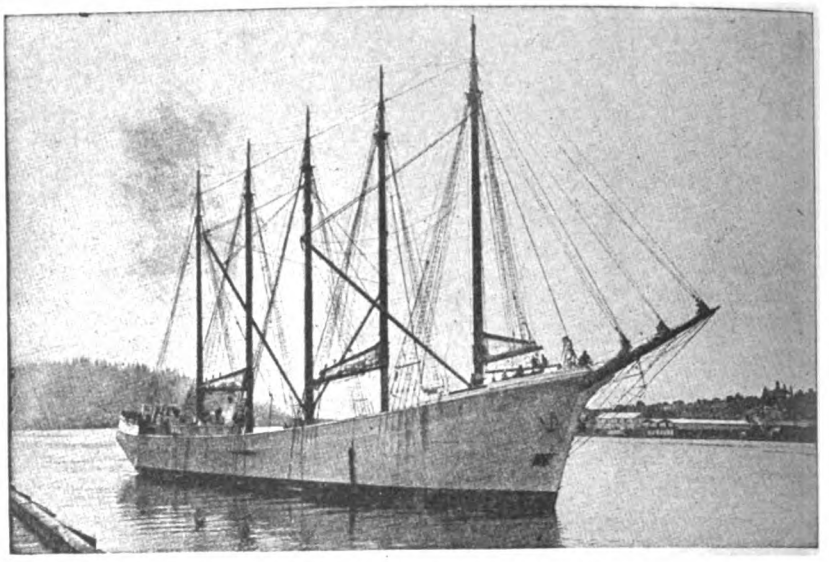

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HIGHEST CLASS WOODEN VESSELS
DESIGNED AND CONSTRUCTED

Chas. R. McCormick Co.

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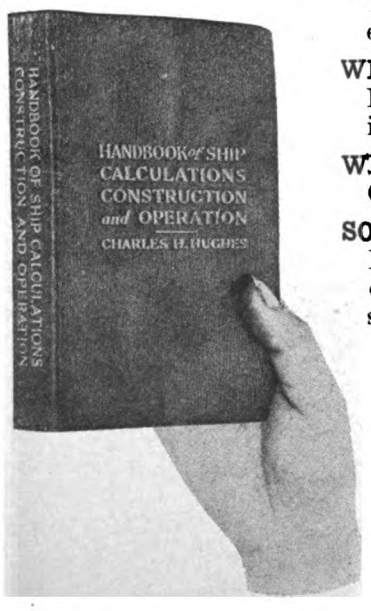
Handbook of Ship Calculations

CONSTRUCTION and OPERATION

By Chas. H. Hughes



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The Gulf Coast Oil News is the only oil journal published in the Coastal States. Its news is authentic, live and right up-to-date. It is not too technical for the layman and proves of great help and interest to investors the country over.

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Gulf Coast Oil News

HOUSTON, TEXAS

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ATLAS FULL DIESEL TYPE ENGINE

SERVICE RELIABILITY POWER

ATLAS-IMPERIAL

DIESEL ENGINES BUILT

IN SIZES
From 110 to 1200 B. H. P.

DISTILLATE ENGINES BUILT

IN SIZES
From 4 to 250 B. H. P.

FREIGHTER "APEX" EQUIPPED WITH 350 H. P. ATLAS DIESEL

Mr. Lee H. Wakefield, the owner of the "Apex" is also the owner of seventeen boats installed with Atlas engines, two of these being Atlas Diesels. Mr. Wakefield selects the Atlas knowing that it is the best engine obtainable and that their service is unequaled.

AN ENGINE NOT AN *EXPERIMENT*

ATLAS-IMPERIAL GAS ENGINE CO.

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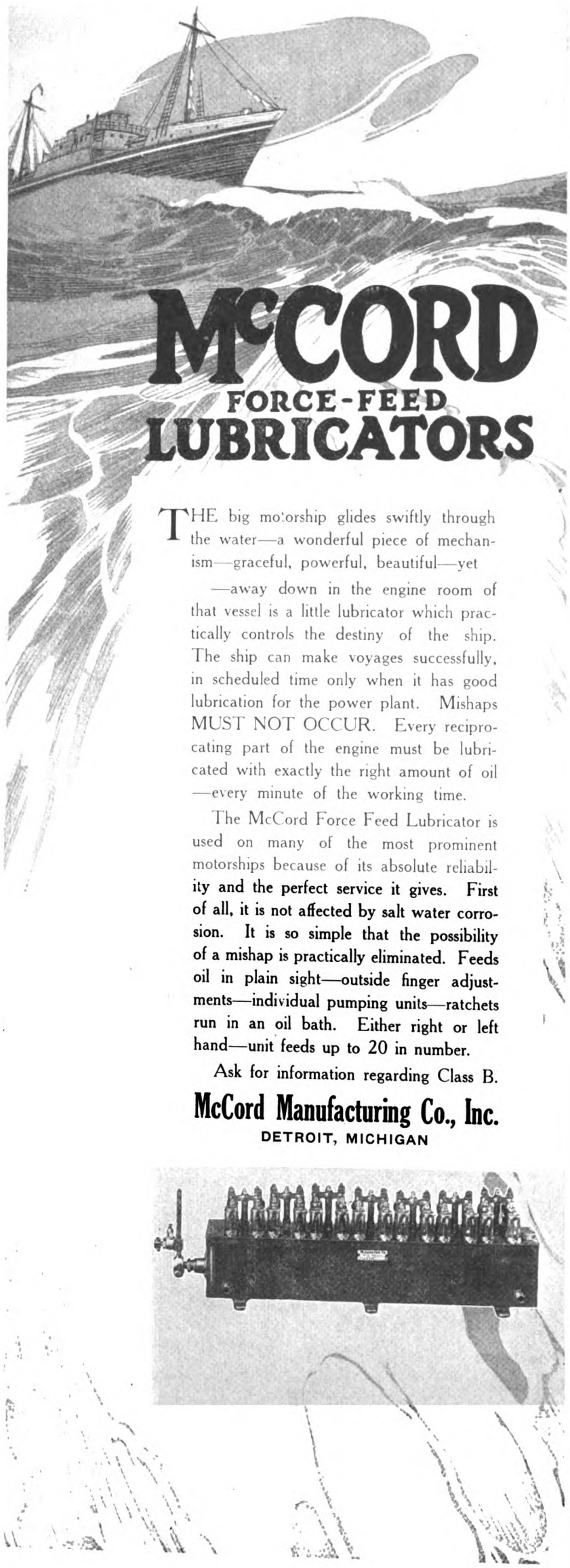


McCORD FORCE-FEED LUBRICATORS

THE big motorship glides swiftly through the water—a wonderful piece of mechanism—graceful, powerful, beautiful—yet

—away down in the engine room of that vessel is a little lubricator which practically controls the destiny of the ship. The ship can make voyages successfully, in scheduled time only when it has good lubrication for the power plant. Mishaps MUST NOT OCCUR. Every reciprocating part of the engine must be lubricated with exactly the right amount of oil —every minute of the working time.

The McCord Force Feed Lubricator is used on many of the most prominent motorships because of its absolute reliability and the perfect service it gives. First of all, it is not affected by salt water corrosion. It is so simple that the possibility of a mishap is practically eliminated. Feeds oil in plain sight—outside finger adjustments—individual pumping units—ratchets run in an oil bath. Either right or left hand—unit feeds up to 20 in number.

Ask for information regarding Class B.

McCord Manufacturing Co., Inc.
DETROIT, MICHIGAN

Low Priced Fuel Oils--available in any port--used for economical power by

"C-O"

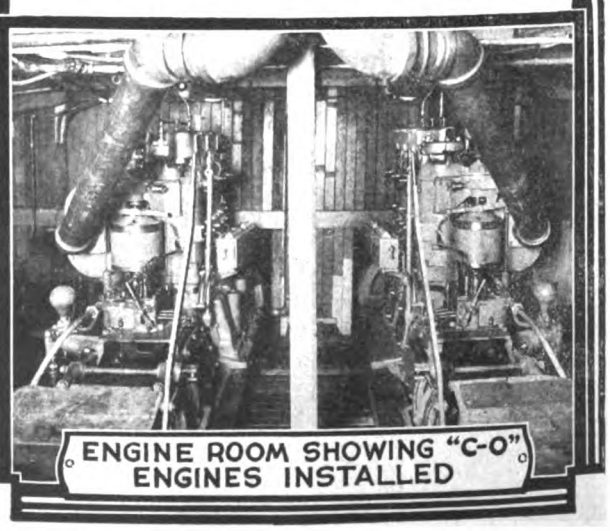
Marine Oil Engines

30 to 200 H. P.

Operate with highest efficiency and safety under all conditions—in crowded harbors—upstream against rapid current—for a steady pull in a choppy sea. Recommended wherever unusual service and economy are required.

Medium Compression—Strong and Simple. Speed variable for light or heavy loads. Superior lubrication. 30 to 100 H. P. with specially designed reverse gears—150 to 200 H. P. direct reversible.

Fairbanks, Morse & Co.
CHICAGO
NEW YORK SAN FRANCISCO



ENGINE ROOM SHOWING "C-O" ENGINES INSTALLED

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CORRECT FUEL
FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil.

Fuel oil for the Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
For Diesel and Semi-Diesel Engines

Operators of Diesel engines should note that if the fuel contains too large a percentage of high boiling constituents complete combustion with the fuel will not be realized. The products of an incomplete combustion are tar, asphaltum and free carbon. These products form a sticky deposit on the valves which prevents their proper operation. This results not only in poor compression and loss of power, but in an excessively high fuel consumption. Tar and asphaltum also deposit themselves behind the Piston rings, which causes them to score the cylinders and prevent efficient lubrication of the Piston. This sticking of the Piston is often blamed on the Lubricating Oil.

"Safety first" dictates that the flash point should be high enough to insure safety to oil in storage or in the bunkers.

In addition the Fuel Oil should have a fluidity that permits it to be readily pumped at all working temperatures.

Uniformity is necessary in fuel oil, so as to eliminate the alteration of valves and air pressure for each run of fuel oil.

To produce a fuel oil that embodies all these necessary qualities it requires an intimate knowledge of the Diesel engine itself and the refining experience and equipment to turn out fuel oil to specifications.

Calol Fuel Oil is the result of scientific investigation and a carefully worked out process of preparation.

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

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SEATTLE, WASH.
PORTLAND, (WILLBRIDGE) ORE.
HONOLULU, T. H.

By barge at:

SEATTLE, WASH.
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CORRECT LUBRICATION
For Diesel and Semi-Diesel Engines

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surface-Ignition, Semi-Diesel, or Diesel type—we recommend

"CALOL DIESEL ENGINE OIL OR CALOL DIESEL ENGINE OIL HEAVY"

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service. At points named above and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

Standard Oil Company
(CALIFORNIA)

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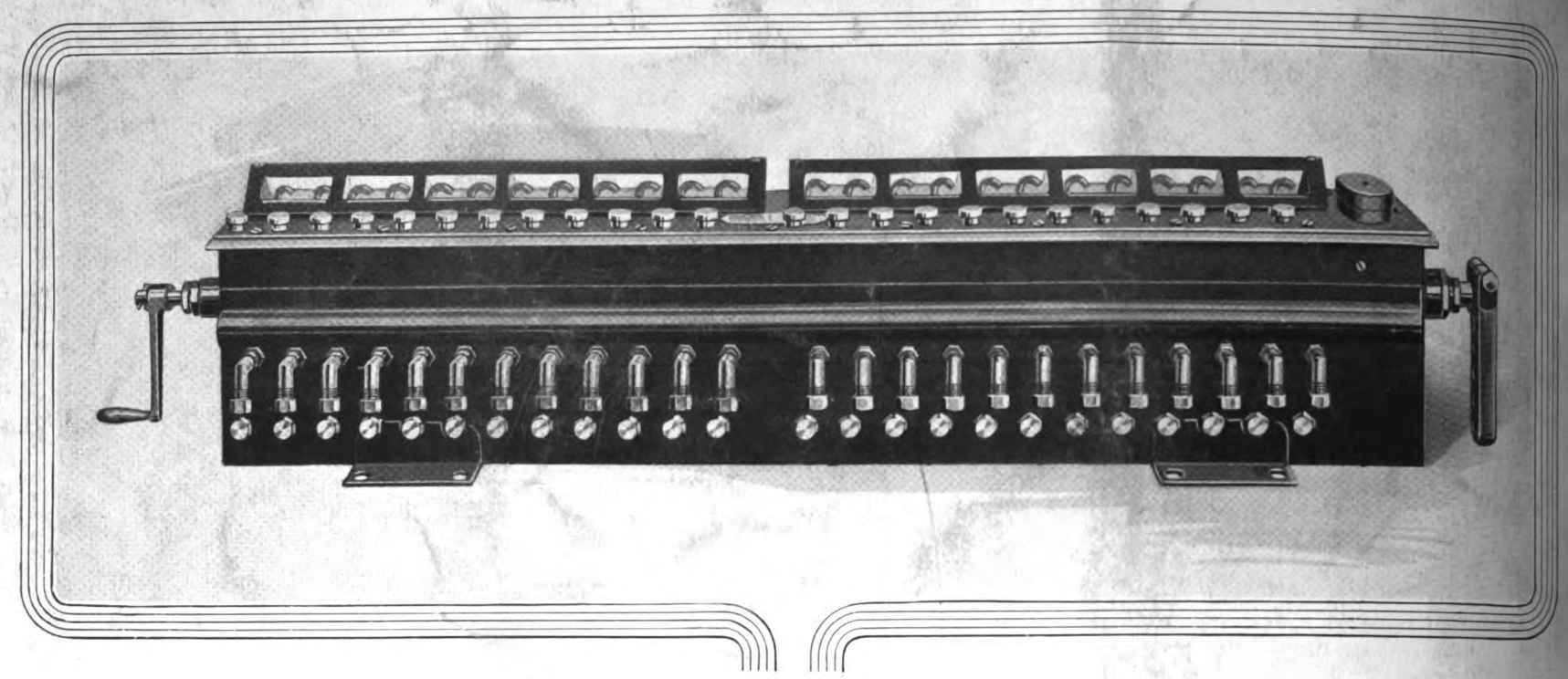

For Both Trunk-Piston and Cross-Head Types

In trunk-piston types of motors, whose construction naturally makes a double lubricating system impossible, Madison-Kipp systems lubricate all parts and thus prevent the troubles, wear, and repairs common to motors of this type when lubricated by crank-case systems.

In certain cross-head types of motors they are being used to save oil and insure long wear by feeding "live" oil to the motor only, while the bearings are served by strained, used oil in a supplementary system.

In other motors of the same type they are giving unusually saving service for motor and bearings both.
They prevent the common condition of gummy cylinder walls, worn pistons, and consequent poor compression and costly repairs, due to carbon and sediment-laden crank-case lubrication.

They save oil, even though they use it only once, because their feed adjustments are so accurate and easily made that waste is eliminated.

These lubricators feed only "live" oil.
Because of the Kipp Valveless Principle they feed it unfailingly against pressures as high as 133 atmospheres.

Madison-Kipp Lubricators are used not only on Diesel and hot-surface types of motors but on heavy tractors, steam-hammers, dredges and compressors.

We can make immediate deliveries, for our factory is the largest in the world exclusively devoted to lubricator manufacture.

The Madison-Kipp Lubricator Company

Madison, Wisconsin

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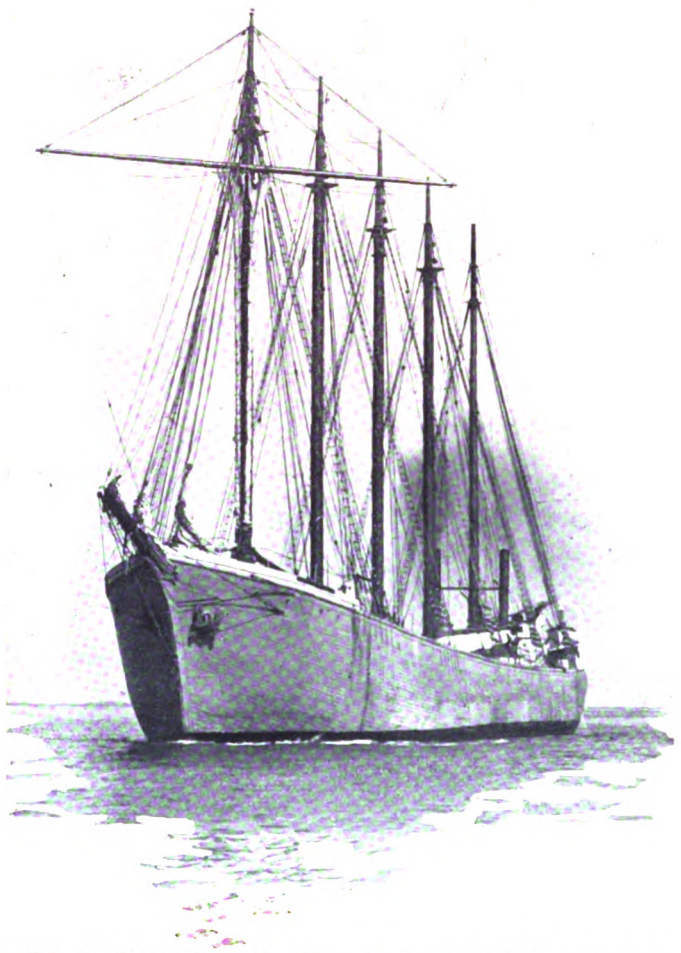
BOLINDER'S

500,000 B. H. P. of Bolinder's Engines Now in Use in All Parts of the World

Present Sales and Yearly Output 70,000 B. H. P



Present U. S. A. Bolinder Installations 43,000 B. H. P.

Messrs. Chas. R. McCormick & Company's Auxiliary Motorship "CITY OF PORTLAND," equipped with two 320 B. H. P. Model "M-11" "BOLINDER" Fuel Oil Engines, now on her way to an Atlantic Port, completed the first lap of the journey from San Francisco to Balboa in the good time of 17 days and 18 hours. The second lap from Colon, Panama, to Portland, Me., was completed in less than 14 days.. As good as steamer time. The "CITY OF PORTLAND" was the first large auxiliary Motorship constructed on the Pacific Coast and has now been in commission for nearly two years.

Craft under construction and to be fitted with "BOLINDER" Engines in the United States alone aggregate over 130,000 tons; "BOLINDER" Engines now in service, over 12,000.

The Bolinder

THE ENGINE THAT IS NOT A DIESEL
THE ENGINE THAT IS NOT A SEMI-DIESEL
THE ENGINE THAT IS THE BOLINDER
THE STANDARD FOR SURFACE-IGNITION FUEL OIL ENGINES

An example of the ruggedness of the "BOLINDER" Engine was displayed in the case of the M. S. "ASTRI" recently. This vessel encountered a hurricane off Mazatlan and became severely strained, resulting in the flooding of the engine room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

HENRY LUND & CO.

Marine Building, San Francisco, Cal.

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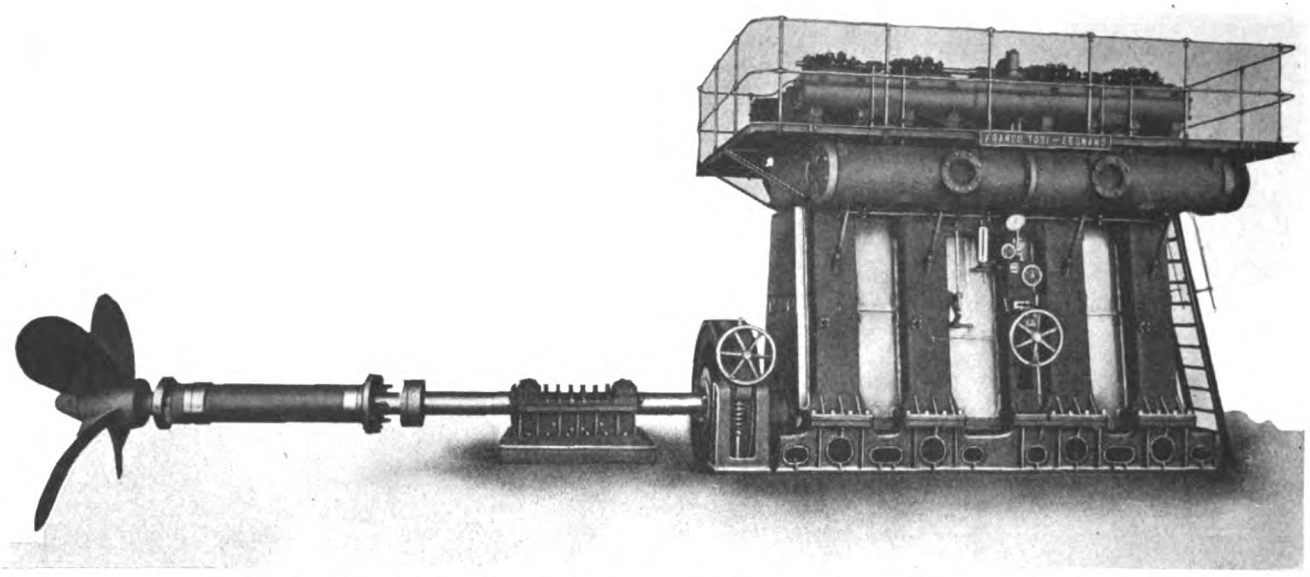
FRANCO TOSI
MARINE
DIESEL ENGINES



TOSI MERCHANT MARINE DIESEL ENGINE AS INSTALLED IN A NUMBER OF ITALIAN TANKSHIPS

HIGH-SPEED DIESEL ENGINES FOR FAST NAVAL SURFACE-CRAFTS.

FOUR AND TWO CYCLE CROSS-HEAD MARINE DIESEL ENGINES OF THE HEAVY-DUTY MERCHANT MARINE TYPE.

DIESEL ENGINES FOR DECK AND ENGINE-ROOM AUXILIARY PLANTS ON MERCANTILE AND NAVAL SHIPS.

AUXILIARY PROPELLING MACHINERY FOR SAILING-VESSELS.

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The Interests of the
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Have been purchased by the undersigned, who will greatly increase the already large stock to accommodate you in every way

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OF ALL KINDS

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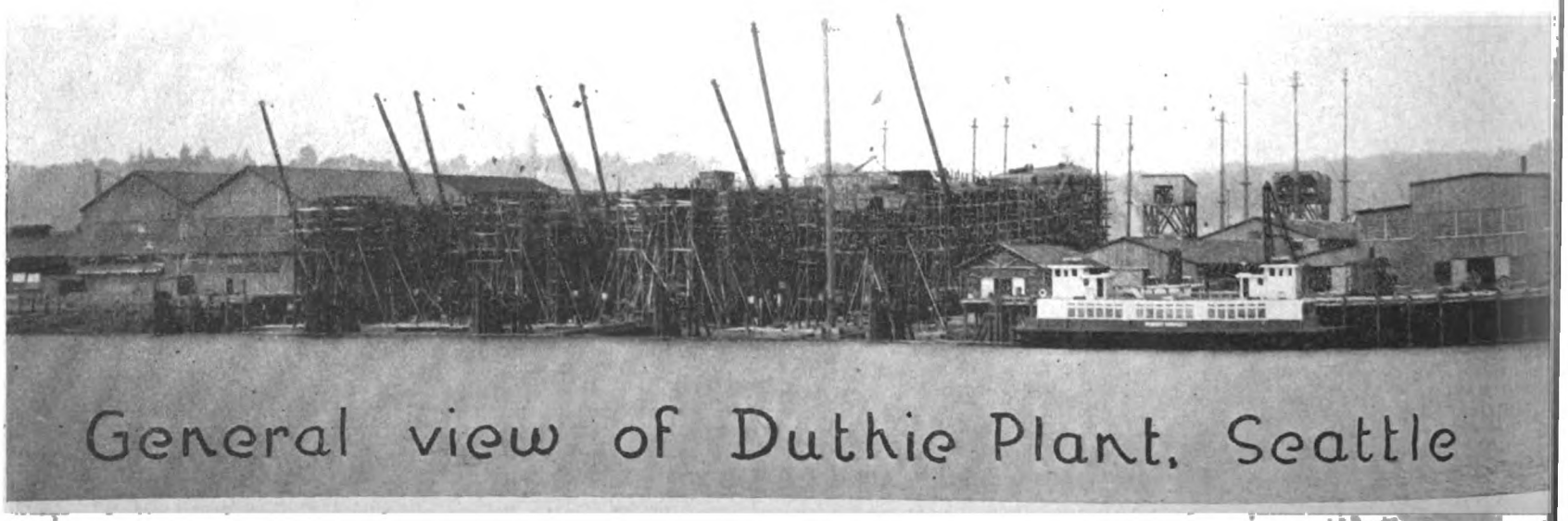

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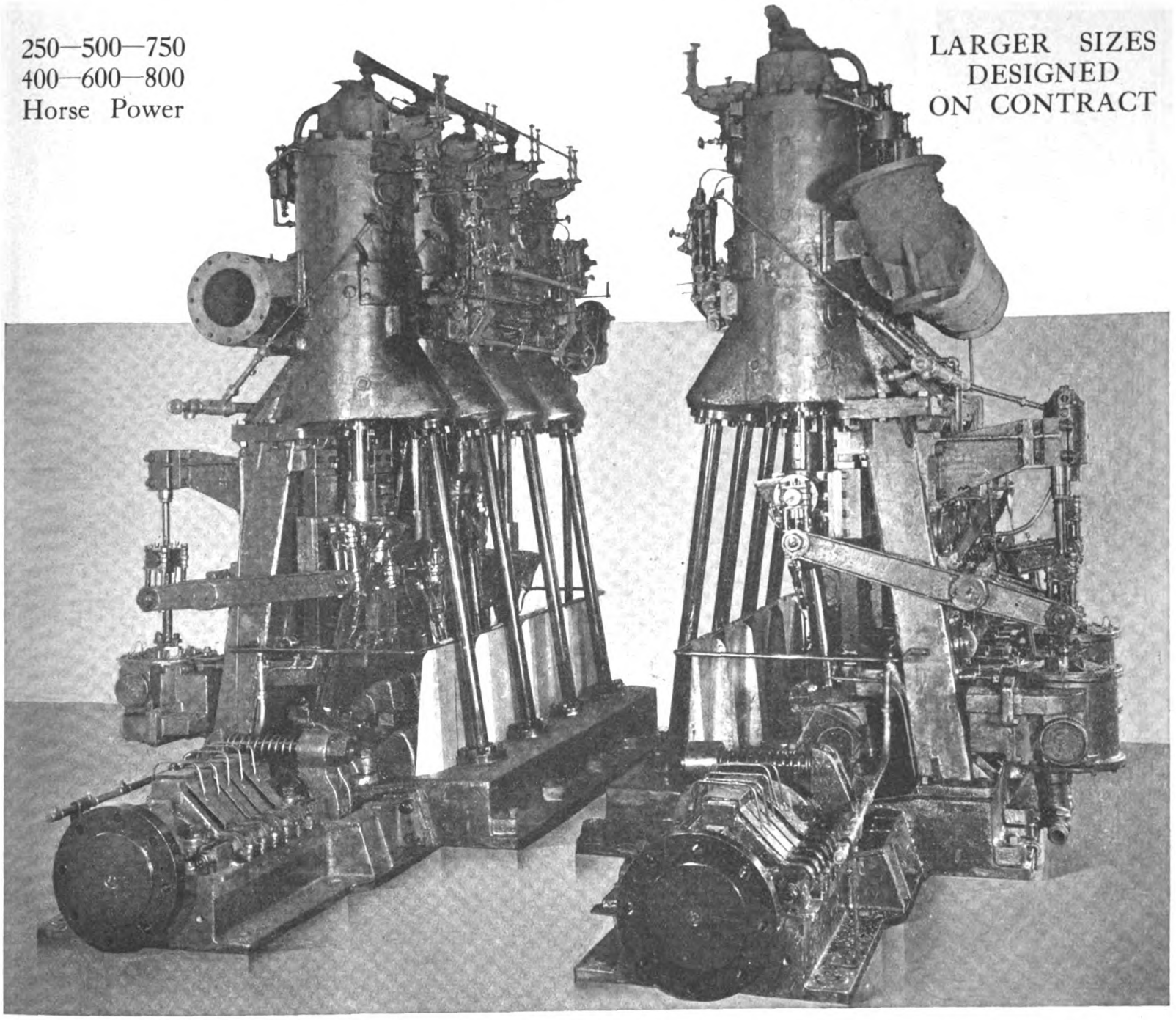
250—500—750
400—600—800
Horse Power

LARGER SIZES
DESIGNED
ON CONTRACT



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EASILY OPERATED

DIRECT REVERSIBLE
4, 6 and 8 CYLINDERS

QUICK DELIVERIES

H. W. SUMNER COMPANY

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For Full-Powered and Auxiliary-Powered Motorships

Also for

Steamships, Yachts, Cruisers, Steam and Gas Launches, Workboats of All Kinds and Lifeboats

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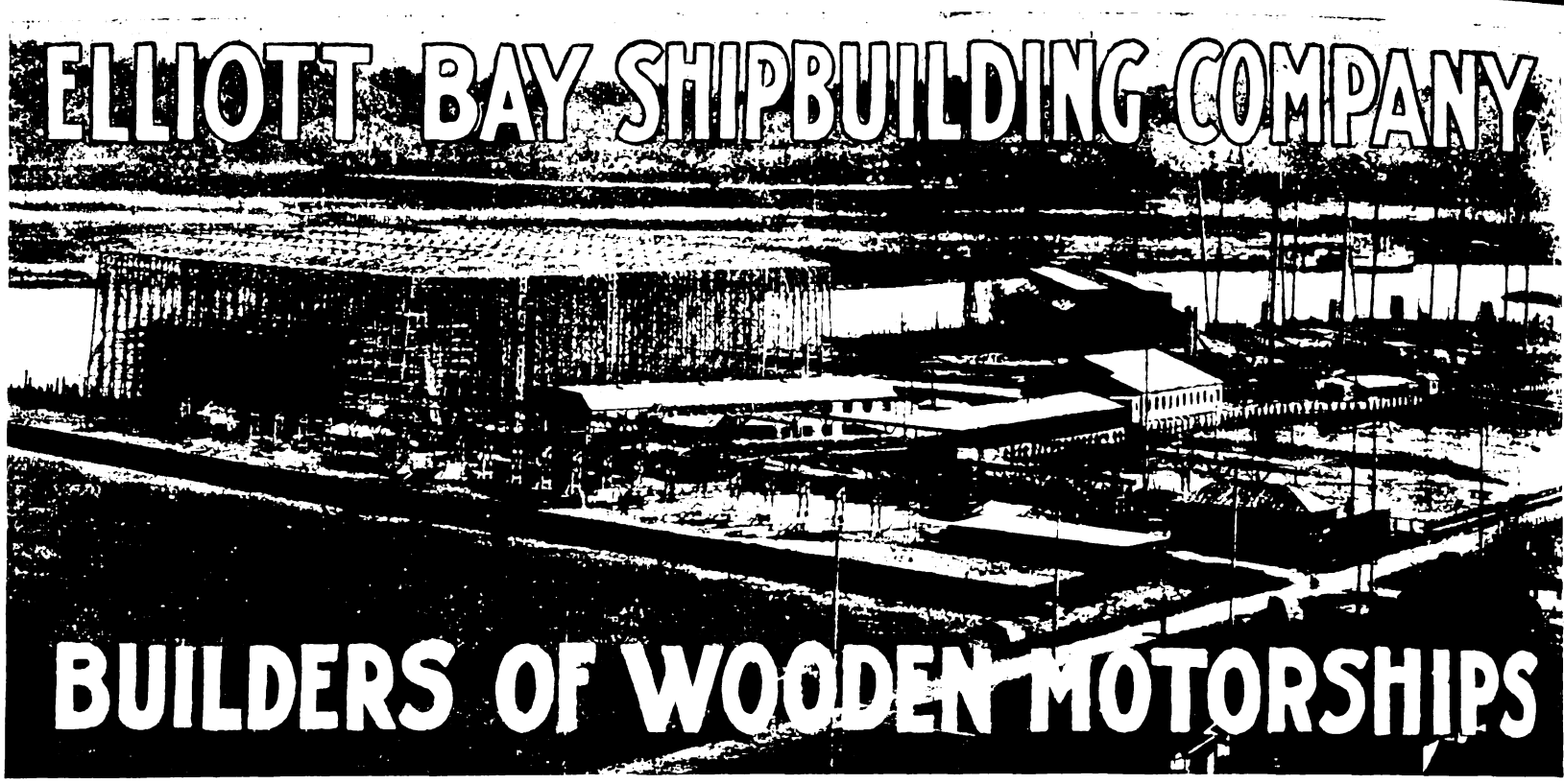

A Modern Shipbuilding Plant
With Every Appliance to Assist in

Speed and Good Workmanship

Five Full-Powered 3,500 Tons Wooden Motorships Now in Course of Construction

Plant at Seattle, Wash.

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SHARE CAPITAL
100 MILLIONS OF LIRE (Fully Paid)

The Era of the Oil

Societa Anonima Italiana

GIO. ANSALDO & CO.

Registered Office, Rome
Administrative and Industrial Office, Genoa, Italy

THE GIO. ANSALDO & C. WORKS, founded by the PRIME MINISTER CAVOUR in 1853 under the Direction of the distinguished engineer, GIOVANNI ANSALDO, had, especially under the subsequent Management and Direction of the Bombrini Brothers, a prosperous career, during which the manufacture was extended from early Locomotives to Marine Engines and to Shipbuilding and other Naval Work. The greatest impulse, however, was given by the late Comm. Ferdinando Maria Perrone in 1904, when the Firm was transformed into the present LIMITED SOCIETY to attain wider scope, which has now been fully realized by his Sons. The original WORKS OF SAMPIERDARENA and the SHIPYARD OF SESTRI PONENTE have recently been greatly enlarged and augmented by other ESTABLISHMENTS and associated CONCERNS, devoted not only to mercantile and Naval Shipbuilding in all its branches, but also to armour plate, guns, and war material of all kinds.

The SOCIETY has at present at work, in its own 28 ESTABLISHMENTS and other associated CONCERNS as hereunder enumerated, about 50,000 hands, men and women, and is capable of building and is building:—

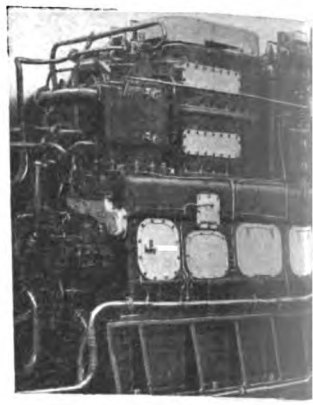
1st—Warships and mercantile vessels of all kinds and sizes from big Super-dreadnoughts and ocean liners to destroyers, torpedo boats, submarines, cargo steamers, tug boats, motor boats, etc.
2nd—Diesel marine oil engines up to 2,000 b. h. p., also marine steam propelling engines, both reciprocating and turbine engines with and without gearing.
3rd—Steam boilers, both water-tube and cylindrical, of all types and sizes.
4th—Locomotives and tenders complete, and Machine Tools.
5th—Armour plates, guns, armoured turrets complete, ammunition complete, metallic cartridges and casings.
6th—Auxiliaries for propelling machinery, and all kinds of auxiliary machinery for ships, such as steering gears, capstans, winches, distilling condensers, and screw propellers.
7th—Dynamos and all electric appliances, auxiliary electric machinery both for ship and land service, electric gear for turrets and guns, elevators, steering gears, electric capstans and winches, cranes and electric propelling machinery.
8th—Aeroplanes and their motors.
9th—Steel, cast iron and bronze castings of all varieties and sizes.
10th—Steel forgings of all kinds and sizes, special steels, and Files.
11th—Boiler steel tubes, steel, iron, copper and brass pipes.
12th—Furniture of all descriptions, both wood and metallic, for warships, liners and mercantile vessels.

List of Establishments

1.	General Engineering Works	SAMPIERDARENA
2.	Locomotive Construction Works	SAMPIERDARENA
3.	Artillery and Big Gun Works	SAMPIERDARENA
4.	War Munition Works	SAMPIERDARENA
5.	Aeroplane Motor Works, San Martino	SAMPIERDARENA
6.	Cast Steel Foundry	CORNIGLIANO LIGURE
7.	Armour Plates and Forging Plant	CORNIGLIANO LIGURE
8.	Oxygen and Hydrogen Production Plant	CORNIGLIANO LIGURE
9.	New Artillery and Big Gun Works	CORNIGLIANO LIGURE
10.	Electric Products Plant	CORNIGLIANO LIGURE
11.	Bronze Foundry	CORNIGLIANO LIGURE
12.	White Metal and Alloys Foundry	CORNIGLIANO LIGURE
13.	Savoia Shipyard	CORNIGLIANO LIGURE
14.	Internal-Combustion Engine Works	CORNIGLIANO LIGURE
15.	Aeroplane Works No. 1 (Marine Hangars)	BORZOLI (Mare)
16.	Aeroplane Works No. 2	BOLZANETO
17.	Aeroplane Works No. 3	TORINO (Corso Peschiera 251)
18.	Tube Mills	FEGINO (Val Polcevera)
19.	Projectile-Case Works	FEGINO
20.	Naval Shipyard	SESTRI PONENTE
21.	Saw Mill and Boat Yards	VOLTRI
22.	Ammunition Works	SESTRI PONENTE
23.	Cast Iron Foundry	PEGLI
24.	Fire Brick Plant	STAZZANO (Serravalle Scrivia)
25.	Genoa Shipyards	MOL GIANO (Porto di Genova)
26.	Iron Mines	COGNE (Valle d'Aosta)
27.	Electric Furnaces for Steel and Pig Iron	ROLLING MILLS: Steel Plant, Aosta
28.	Special Alloys Plant	AOSTA

Associated Concerns

1.	Shipyard and Works, Savoia	CORNIGLIANO LIGURE
2.	Shipyard and Works, Fiat San Giorgio	SPEZIA
3.	Internal-combustion Engine Works, Fiat San Giogio	TORINO
4.	Ore Mines	COGNE (Val d'Aosta).
5.	Italian National S.S. Company	GENOVA
6.	Lignite Mines	GROSSETO (Tuscany).
7.	Cerpelli's Centrifugal and Turbine Pump Works	LA SPEZIA
8.	Westinghouse Company	VADO LIGURY
9.	Magnesite Mines	QUAREIDUELLO (Tuscany)



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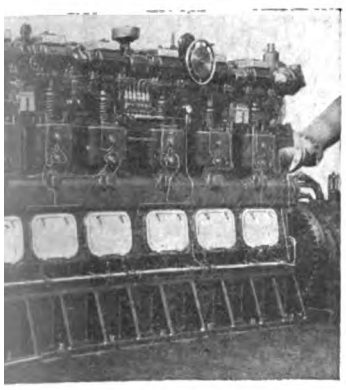

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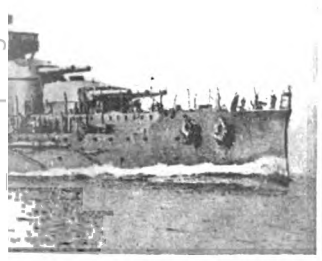

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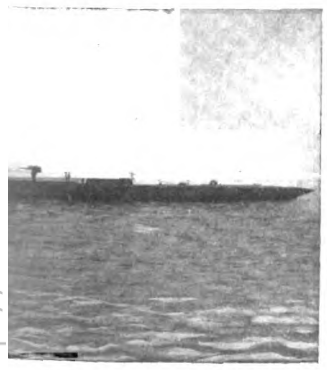

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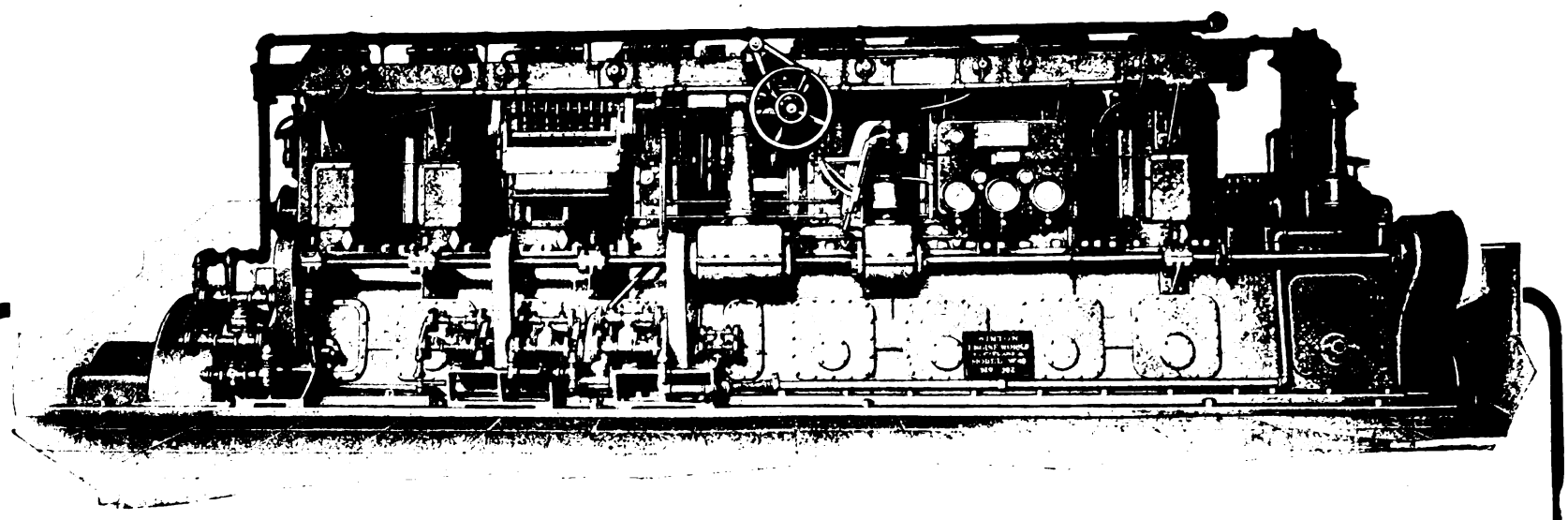

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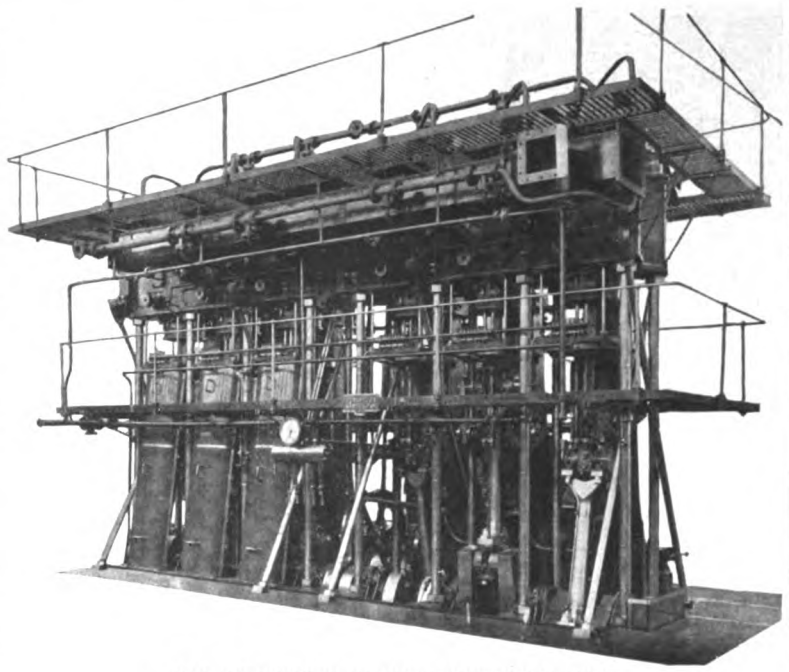

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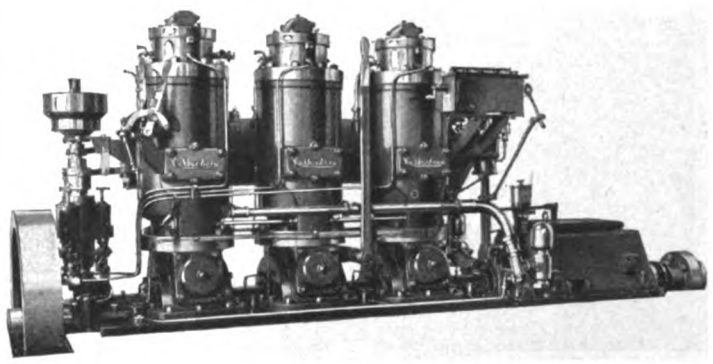

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Variable speed instantly obtainable from just "turning over" to wide open.
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Absolutely reliable. Fuel consumption .55 per H. P. hour.

Sizes 60 H. P. Upwards

KAHLENBERG standard engines in medium and heavy duty types are made in sizes from 2 to 54 H. P., and we would strongly recommend them for operating on KEROSENE, SOLAR OIL and GAS OIL. You ought to know more of the exclusive advantages the KAHLENBERG offers you.

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Announcement

The Gulowsen Grei Engine Company

will manufacture the Gulowsen Grei heavy oil engine in the United States.....

This engine will be an exact duplicate of the Grei engine which is famous in Norway.....

It will be of the same high character and workmanship.....

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A complete modern factory of very large capacity and with every facility is now in the course of construction at Seattle U.S.A.....

GULOWSEN GREI ENGINE CO. SEATTLE U.S.A.

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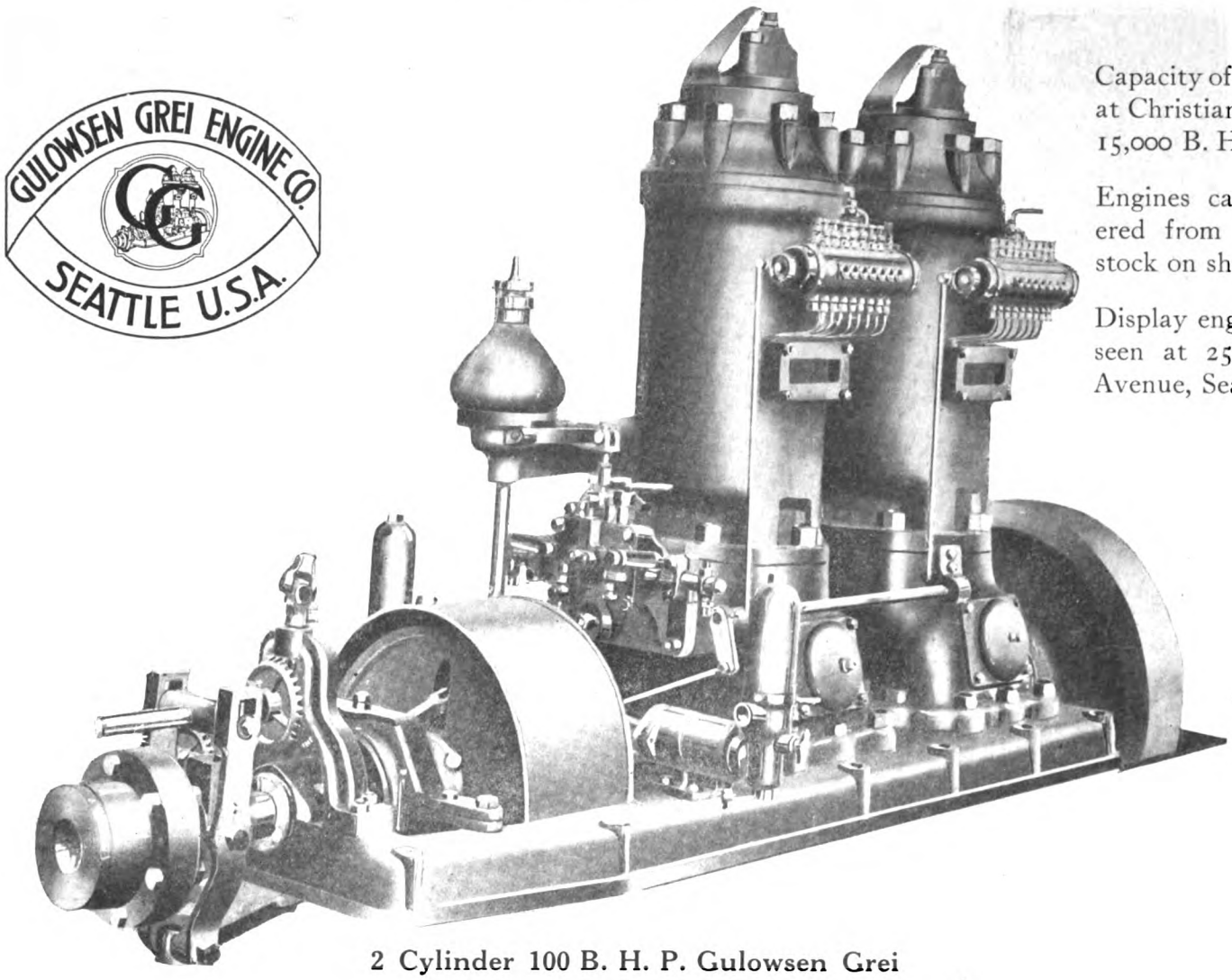
The Gulowsen Grei Engine



Capacity of Factory at Christiania, Norway, 15,000 B. H. P.

Engines can be delivered from New York stock on short notice.

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The Gulowsen Grei Heavy Oil Motor has for years been the standard for the Norwegian fishing fleet

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Exchange your present engine for a new one. We will make you a most liberal allowance.

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Burnoil, heavy duty, 4-cycle, heavy oil engines, quick starting, economical, easy to operate

ALL OF OUR ENGINES ARE MOST CAREFULLY REBUILT IN OUR SHOPS BY OUR OWN SKILLED MECHANICS AND ARE FULLY GUARANTEED

Quotations on our rebuilt motors are subject to prior sale. We therefore request that you wire us to hold for you the motor which you select, following with deposit by first mail. There will be a nominal charge made for crating, according to the size of engine

Description	Price
225-250 H.P. Sterling, 8 cyl., 4 cycle, high speed type, used very little and fully guaranteed, with carburetor, Bosch 2-point ignition, reverse gear, etc.	$2000
225 H.P. Sterling, 8 cyl., 4 cycle, 5½ x 6¾, double valve, bronze base, 2 carburetors, magneto, reverse gear, new	2500
225 H.P. Jencick, 8 cyl., 4 cycle, 7½ x 7½, excellent condition, carburetor, coil, Bosch magneto and magnetic M. & B. ignitors, reverse gear, mechanical oiler, propeller; as is	2500
One 200 H.P. Sterling engine, 8 cyl., 4 cycle, 8¼ x 10, model D, heavy duty, with magnetos, coils, reverse gear, etc., brand new. Can be fitted to operate on kerosene	6800
175 H.P. Jencick, 6 cyl., 4 cycle, 7½ x 7½, carburetor, Bosch magneto, and magnetic M. & B. ignitors, reverse gear	1600
150 H.P. Buffalo, 6 cyl., 4 cycle, 9 x 11, carburetor, Bosch magneto, coil, air starting	4000
135 H.P. Sterling, 6 cyl., 4 cycle, 5½ x 6¾, double valve, aluminum base, with carburetor, reverse gear, magneto, new	1800
125 H.P. Winton, 6 cyl., 4 cycle, 8 x 11, carburetor, magneto coil, reverse gear	3800
120-170 H.P. Sterling, 8 cyl., 4 cycle, 5½ x 6¾, 1917 type FM, nearly new, carburetor, magneto coil, reverse gear, electric starter, propeller	2950
100 H.P. Blanchard, 4 cyl., Semi-Diesel, oil burning, 10" x 10", mechanical oiler, reverse gear, air tank, and propeller outfit, weight 11,000 lbs.	6500
100 H.P. Sterling, 8 cyl., 4 cycle, 5½ x 6, carburetor, coil, Bosch high tension magneto, reverse gear, oiler, propeller. Excellent condition	1250
70 H.P. Thelma, 6 cyl., 4 cycle, 5⅛ x 5½, with Bosch magneto, coil, spark plugs, carburetor, reverse gear and propeller, practically new, 1914 model, weight 1000 lbs.	950
70 H.P. Speedway, 6 cyl., 4 cycle, 6 x 6, with carburetor, coil, spark plugs, reverse gear	1000
60-70 H.P. Brown, 6 cyl., 2 cycle, 1909, A-1 condition, Atwater Kent ignition, Bosch high tension magneto, Kingston carburetor, 5¼ x 4½, aluminum base, 800 lbs., factory overhauled, like new	500
65 H.P. American-British, 6 cyl., 4 cycle, carburetor, Bosch H. T. magneto, coil, spark plugs, reverse gear, propeller, splendid condition	750

Description	Price
60 H.P. Speedway, 6 cyl., 4 cycle, 6 x 6, with carburetor, magneto, coil, reverse gear and propeller	1200
52 H.P. Mercury, 4 cyl., 4 cycle, 5¼" x 5", coil, carburetor, magneto, reverse gear, mechanical oiler, rear starter	600
50-65 H.P. Craig, 4 cyl., 4 cycle, carburetor, coil, K-W magneto, reverse gear, propeller outfit	2500
50 H.P. Speedway, 4 cyl., 4 cycle, 6 x 6, with carburetor, coil, spark plug and reverse gear	750
50 H.P. Automatic, 4 cylinder, 4 cycle, 7½ x 9, with carburetor, coil, magneto, reverse gear and propeller	1200
48 H.P. Barber, 4 cyl., 2 cycle, carburetor, coil, Bosch magneto, spark plugs, etc., 6½ x 6¼, weight 1400 lbs.	250
45-75 H.P. Sterling, 5½ x 6, carburetor, Bosch Dual magneto and coil, reverse gear, propeller, 6 cyl., 4 cycle	1400
45-65 H.P. Sterling, 6 cyl., 4 cycle, 5½ x 6, carburetor, coil, magneto, reverse gear and propeller	1250
40-50 H.P. Maximotor, 4 cyl., 4 cycle, carburetor, coil, spark plugs, coupling, weight 250 lbs.	150
40-50 H.P. Hall, 6 cyl., 4 cycle, 5½ x 6¼, carburetor, Bosch magneto, coil, reverse gear, propeller outfit	1400
40-50 H.P. 20th Century, 4 cyl., 4 cycle, 6½ x 8½, with carburetor, Bosch Dual magneto, and coil and reverse gear	1400
40-50 H.P. Speedway, 4 cyl., 4 cycle, 6½ x 8, carburetor, Bosch magneto, coil, spark plug, reverse gear	1600
40 H.P. Sterling, 4 cyl., 4 cycle, 6½ x 8, model D, heavy duty, carburetor, Bosch magneto, and magnetic M. & B. ignitors, also Jump Spark ignition, reverse gear	1600
40 H.P. Peerless, 4 cyl., 4 cycle, carburetor, coil, propeller	250
Two 40 H.P. Lamb, 4 cyl., 4 cycle, 6⅝ x 7, each with carburetor, coil, reverse gear and propeller, twin screw outfit, each For the pair	950 1800
37½ H.P. Automatic, 3 cyl., 4 cycle, carburetor, coil, reverse gear	950
36-45 H.P. Anderson, 6 cyl., 4 cycle, 5 x 6, carburetor, magneto, coil, reverse gear and propeller; nearly new	1000

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Description	Price
30-50 H.P. Allan-King, 4 cyl., 4 cycle, carburetor, Atwater Kent ignition, Paragon reverse gear and propeller	175
Two 30-45 H.P. Sterling, 4 cyl., 4 cycle, 5½ x 6, each with carburetor, coil, magneto, reverse gear and propeller, each	1050
Twin Screw outfit, for the pair	2000
30 H.P. H. L. F. Trebert, 4 cyl., 4 cycle, 4⅞ x 5½, carburetor, coil, reverse gear	300
25-35 H.P. Sterling, 4 cyl., 4 cycle, heavy duty type, 5½ x 8, carburetor, Bosch magneto, coil, reverse gear	1350
25 H.P. Craig, 4 cyl., 4 cycle, 6 x 7, with carburetor, coil, reverse gear and propeller	900
25 H.P. Hubbard, 4 cyl., 4 cycle, 4 x 5, with carburetor, coil and spark plugs	300
25 H.P. Ferro, 3 cyl., 2 cycle, carburetor, spark plugs, and coupling	200
22 H.P. Bridgeport, 2 cyl., 2 cycle, high speed type, carburetor, coupling	195
21 H.P. Mohawk, 3 cyl., 2 cycle, carburetor, muffler, coupling	175
20-35 H.P. Sterling, 4 cyl., 4 cycle, 4⅜ x 5½ aluminum base with carburetor, magneto, coil, reverse gear, etc.	600
20 H.P. Fox, 2 cyl., 2 cycle, carburetor and oiler	150
20 H.P. Gray, 2 cyl., 2 cycle, carburetor, reverse gear, propeller and steel shaft	200
18 H.P. T. & M., 3 cyl., 2 cycle, with carburetor, coil, reverse gear, propeller	195
16-18 H.P. Standard, 2 cyl., 4 cycle, carburetor, coil, magneto, reverse gear and propeller	950
16 H.P. Pearl, 2 cyl., 4 cycle, carburetor, coil, magneto, reverse gear, propeller	375
15-18 H.P. Lackawanna, 2 cyl., 2 cycle, carburetor, coil, muffler, One-Way Clutch, all in excellent condition	160
15-18 H.P. Capitol, 3 cyl., 2 cycle, carburetor, coil, reverse gear	125
15 H.P. Cushman, 2 cyl., 2 cycle, 5 x 5, carburetor, coil, Paragon reverse gear, propeller	180
15 H.P. Van Epps, 3 cyl., 2 cycle, with carburetor, coil, spark plugs, reverse gear, propeller	150
15 H.P. Fulton, 2 cyl., 2 cycle, coil, carburetor, propeller	175
15 H.P. Ferro, 2 cyl., 2 cycle, carburetor, coil, reverse gear	175
15 H.P. Knox, 2 cyl., 2 cycle, with carburetor, coil Paragon reverse gear and propeller	210
15 H.P. Ferro, 2 cyl., 2 cycle, carburetor, spark plugs, and coupling	150
14 H.P. Buffalo, 4 cyl., 4 cycle, carburetor, coil and reverse gear	300
14 H.P. Heinel, 4 cyl., 4 cycle, 4 x 4½, carburetor, coil, reverse gear, propeller	375
14 H.P. Mohawk, 2 cyl., 2 cycle, carburetor, muffler, coupling	110
12-16 H.P. Eddystone-Globe, 5½" x 5", 2 cyl., 2 cycle, carburetor, coil, reverse gear, K-W magneto, shaft, propeller, stuffing-box	225
12-15 H.P. Sterling, 2 cyl., 4 cycle, 5½ x 7, carburetor, coil, reverse gear, Model C, guaranteed	475
12-14 H.P. Monarch, 2 cyl., 4 cycle, carburetor, coil, reverse gear, bilge pump, 5 x 6½	359
12 H.P. Eagle, 2 cyl., 2 cycle, 4½ x 5, Model 2C, carburetor, coil, K-W magneto, reverse gear and safety rear starter, propeller	195
12 H.P. Fairbanks-Morse, 2 cyl., 2 cycle, reverse gear	150
12 H.P. Lamb, carburetor, coil and reverse gear	325
12 H.P. Hettinger, 2 cyl., 4 cycle, 5½ x 6, with carburetor, coil, reverse gear	375
12 H.P. Hall, 2 cyl., 4 cycle, carburetor, coil, reverse gear	375
12 H.P. Mercury, 2 cyl., 4 cycle, carburetor, Perfex ignition, reverse gear	390
12 H.P. Hall, 2 cyl., 4 cycle, carburetor, coil, one-way clutch, 5 x 7	325
12 H.P. Two cyl. Gray, with carburetor, coil, oiler and propeller	150

Description	Price
12 H.P. Lathrop, 2 cyl., 2 cycle, coil, carburetor, magneto, reverse gear, muffler and propeller	210
10-12 H.P. Harris, 2 cyl., 4 cycle, 4¾ x 6, with carburetor, Atwater Kent ignition system, reverse gear and propeller	350
10-12 H.P. Palmer, 2 cyl., 2 cycle, with carburetor, coil and reverse gear	175
10 H.P. Vulcan, 2 cyl., 4 cycle, 5x6, carburetor, coil, reverse gear	350
10 H.P. Tuttle, 2 cyl., 2 cycle, carburetor, Perfex ignition and coupling	110
10 H.P. Globe, 2 cyl., 4 cycle, 6 x 7, unit plant with reverse gear, carburetor, coil, propeller	475
10 H.P. Gray, single cyl., 2 cycle, carburetor, coil, spark plug, propeller	85
10 H.P. Racine, 2 cyl., 2 cycle, carburetor, K-W magneto and coil, reverse gear and propeller outfit	150
8 H.P. Dutton, 2 cyl., 2 cycle, carburetor, coupling and muffler	95
8 H.P. Harris, 2 cyl., 4 cycle, carburetor, coil, reverse gear, propeller and stuffing-box, splendid condition	300
8 H.P. Ackers, 2 cyl., 2 cycle, J. S., carburetor, coil, spark plugs, propeller	75
8 H.P. Barker, 2 cyl., 2 cycle, carburetor, coil and propeller outfit	100
8 H.P. Dunn, 2 cyl., 4 cycle, new 1917, vaporizer, coil, muffler and propeller outfit	125
8 H.P. American, 1 cyl., 2 cycle, heavy duty, carburetor, coil and Roper Reversible propeller	95
7 H.P. Fairfield, carburetor, coil, muffler and propeller outfit	75
7 H.P. Fairbanks-Morse, 2 cyl., 2 cycle, carburetor, coil, coupling	110
7 H.P. Eagle, 2 cyl., 2 cycle, model 2-K, new in 1917, used for three weeks only, carburetor, coil, magneto, reverse gear and rear starter	160
6 H.P. Schneckner, 1 cyl., 2 cycle, carburetor, coil, reverse gear and muffler	95
6 H.P. Lathrop with carburetor, coil and reverse gear	100
5-6 H.P. Palmer, 2 cyl., 2 cycle, carburetor, coil, spark plugs, propeller and shaft	95
5½ H.P. Palmer, carburetor, coil, coupling, muffler and propeller	65
5 H.P. Palmer, 1 cyl., 4 cycle, carburetor, coil, and reverse gear	125
5 H.P. Howard, 1 cyl., 2 cycle, 4¼ x 4¼, with vaporizer, coil, spark plug and propeller	60
5 H.P. Dutton, single cyl., 2 cycle, carburetor, muffler, coupling	55
4-6 H.P. Globe, single cyl., 4 cycle, 5¾ x 6½, carburetor, coil, reverse gear and propeller	175
4 H.P. Stationary, 1 cyl., 4 cycle	125
3½ H.P. Bridgeport, with carburetor, coil and coupling	60
3 H.P. Ferro, with carburetor, coil and coupling	55
3 H.P. Waterman Outboard motor	55
2 H.P. Wisconsin Outboard motor	45
Paragon reverse gear suitable for 40-50 H.P. heavy duty	60
One 4 cylinder Splitdorf magneto, with coupling and dual coil complete	40
One 6 Cylinder Bosch K-6 magneto, with 6 Bosch magnetic M. & B. ignitors	140
One Bosch elec. Starting motor (flywheel type) with Bosch generator complete, suitable for immediate installation on Model F Sterling	175
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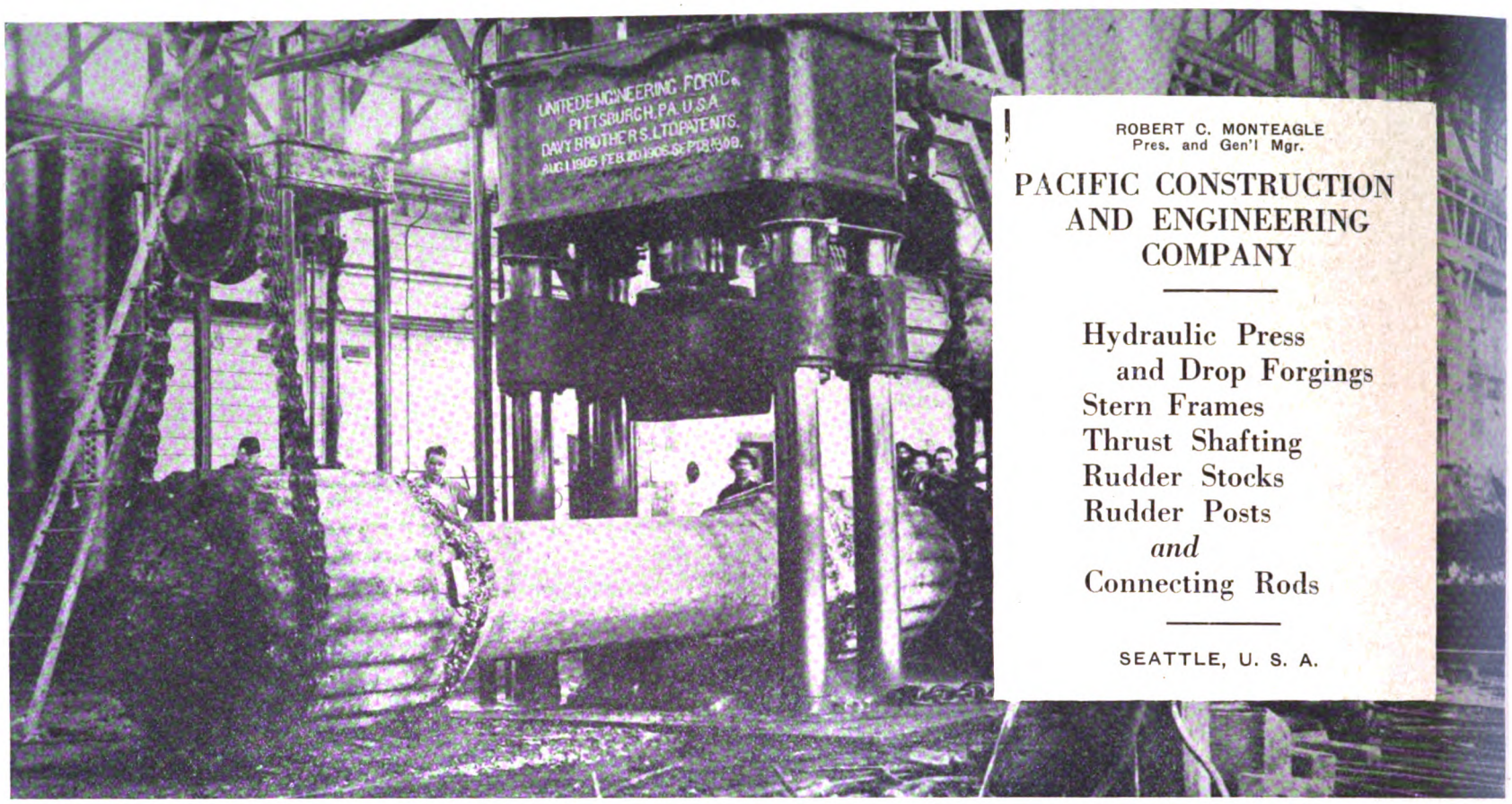

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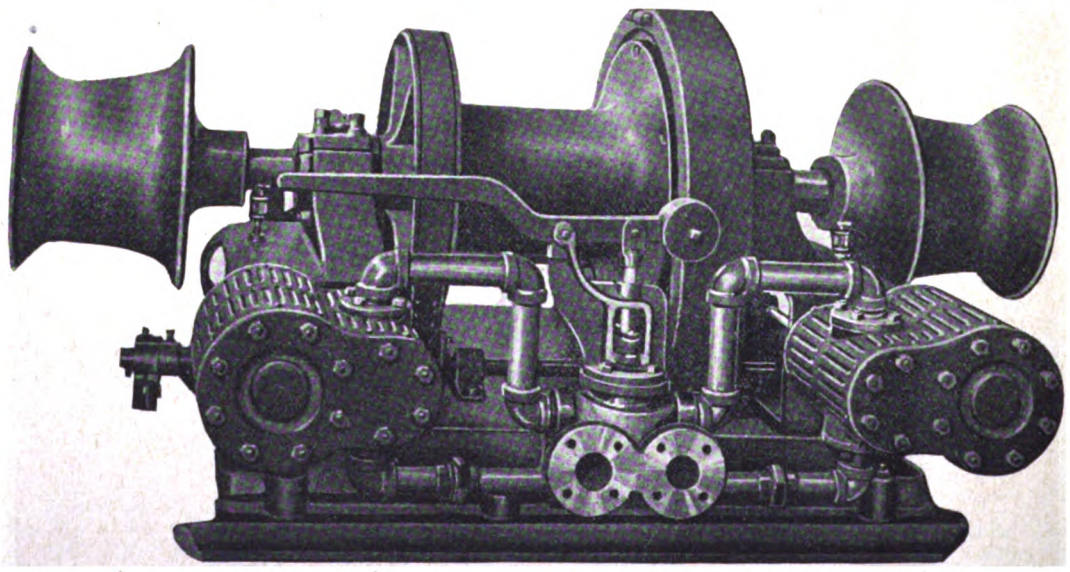

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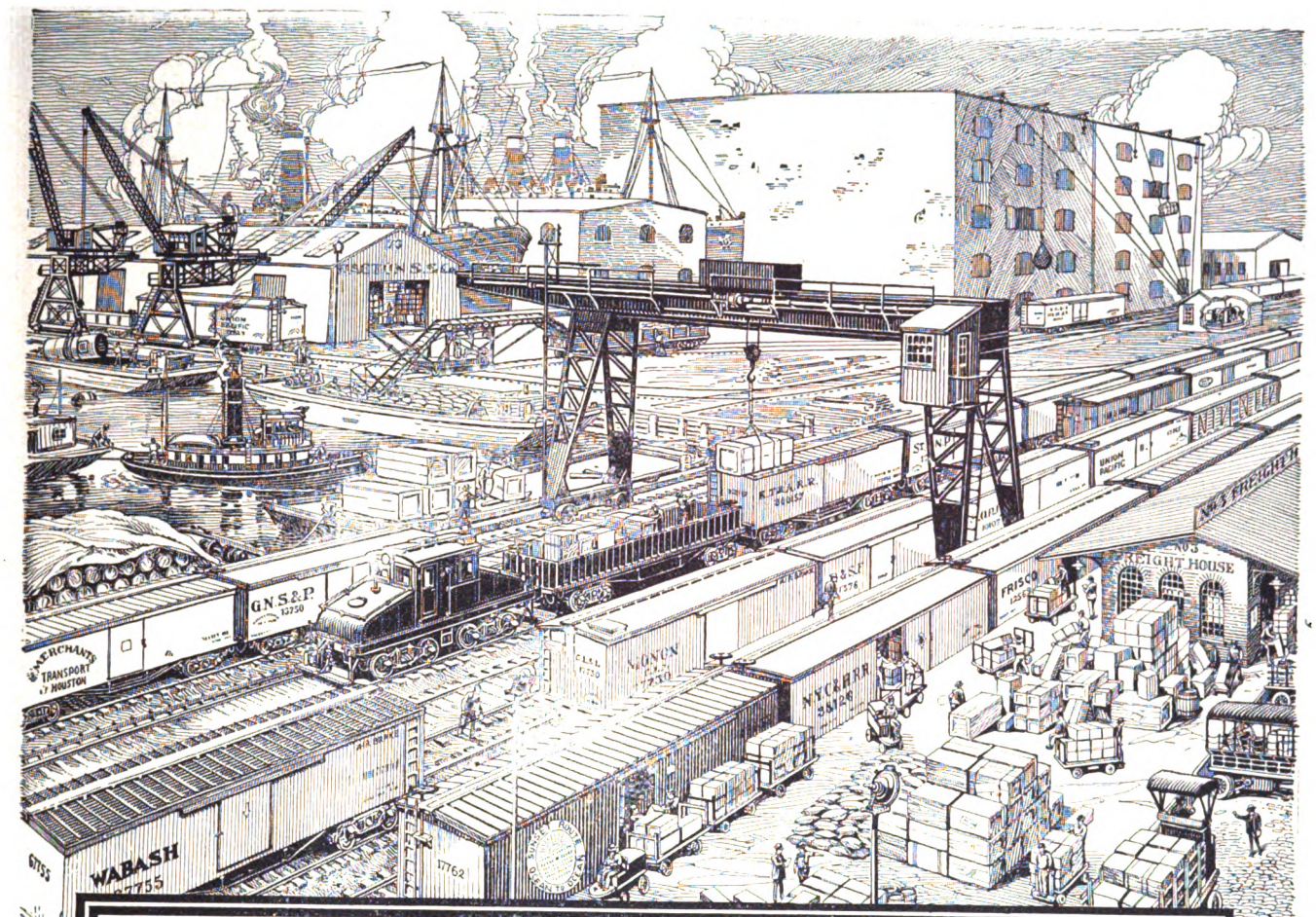

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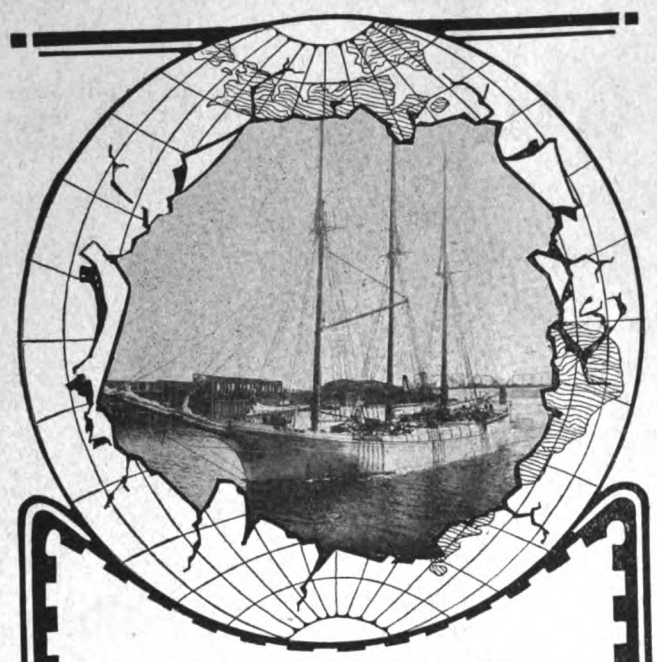

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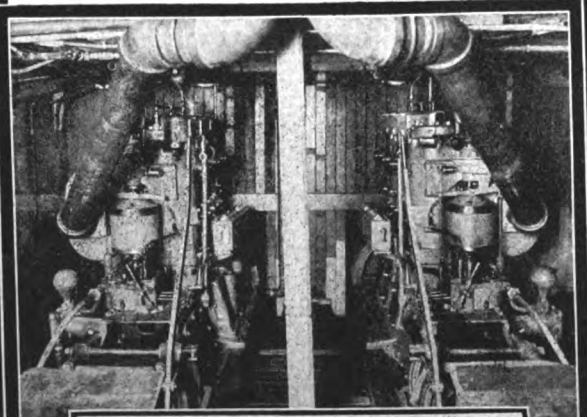
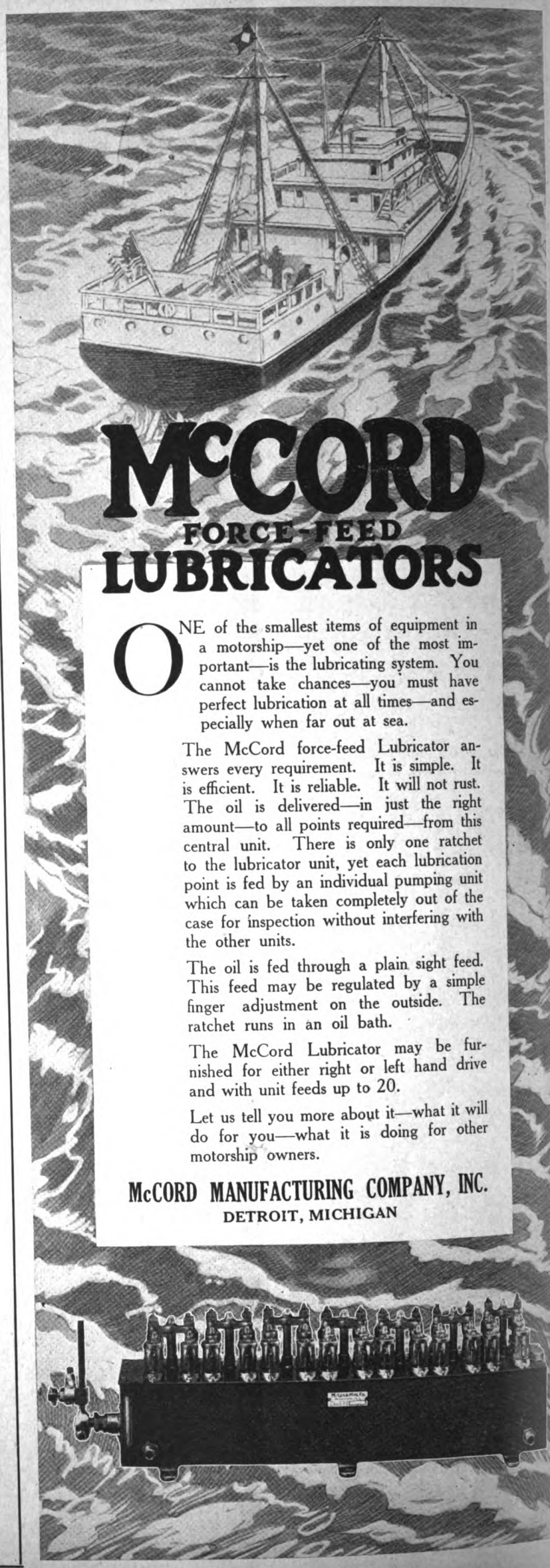


ENGINE ROOM SHOWING "C-O" ENGINES INSTALLED



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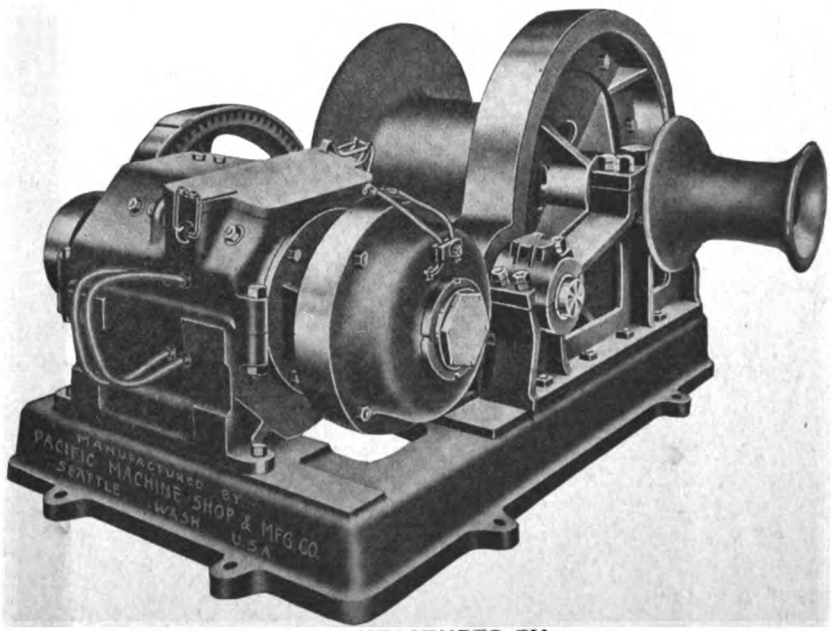

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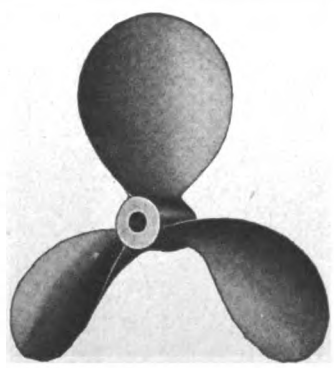

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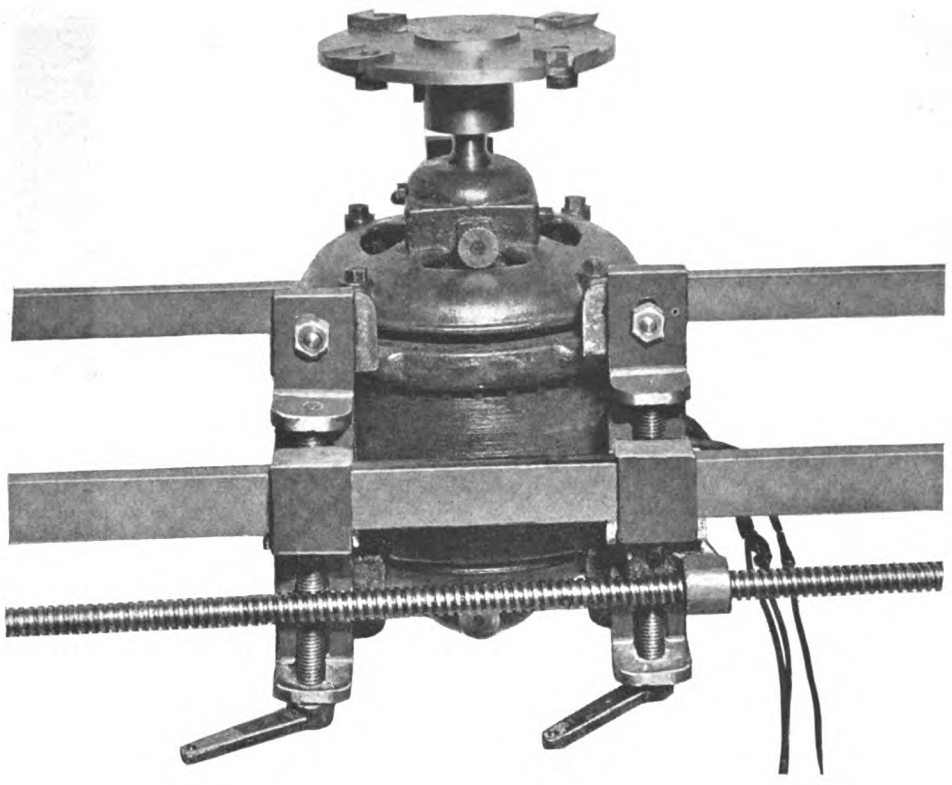

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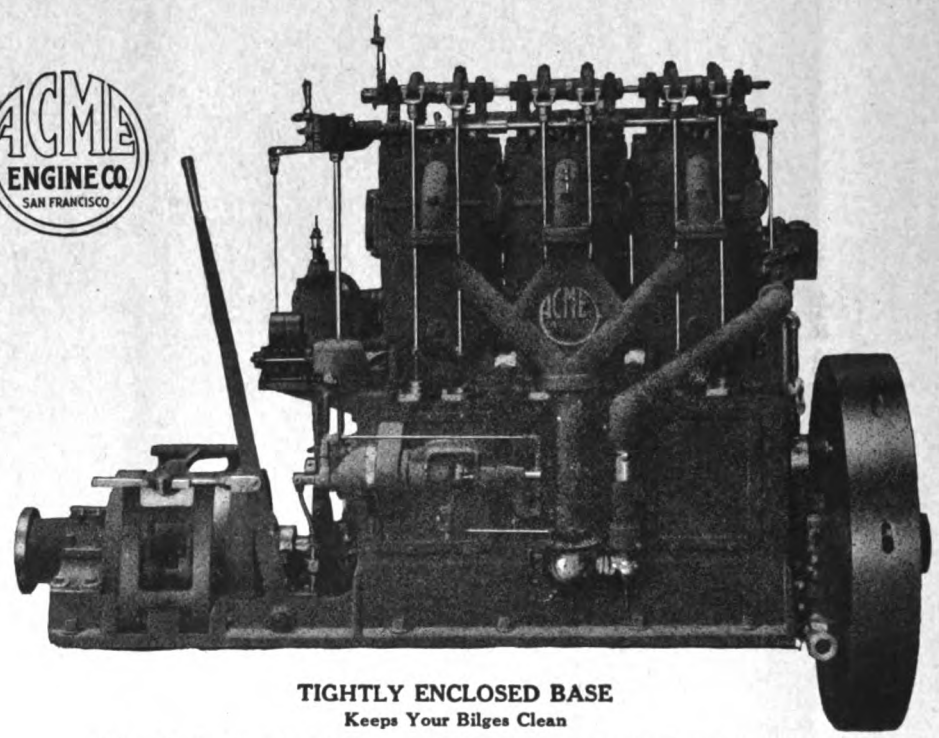

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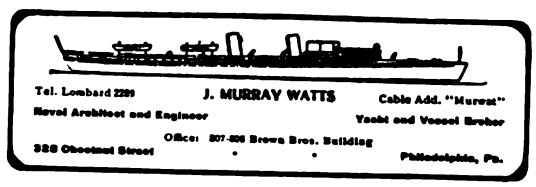

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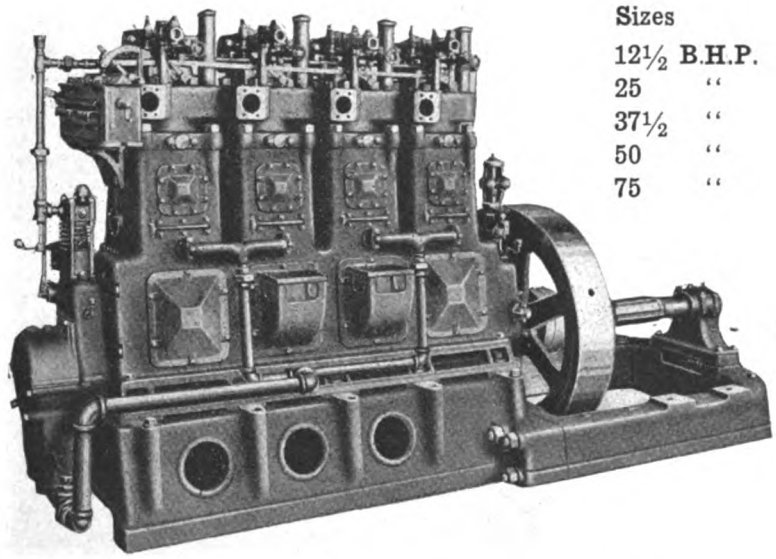

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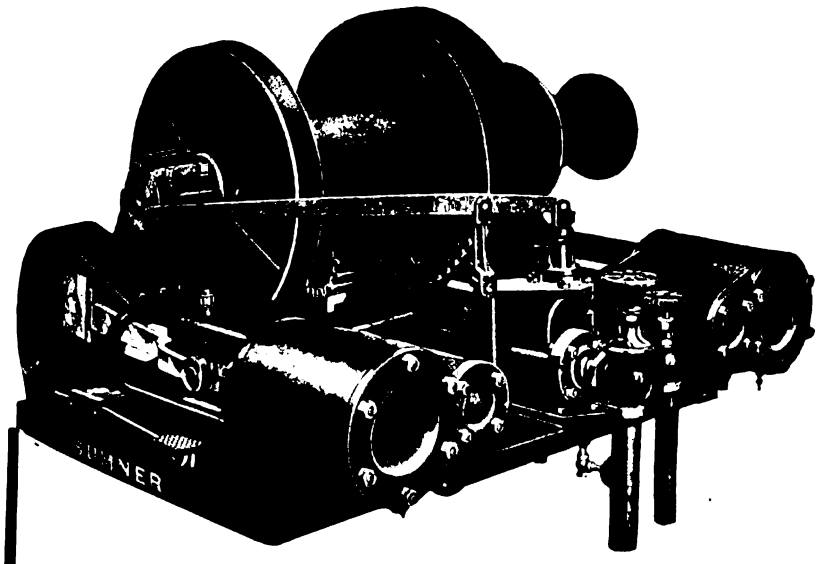

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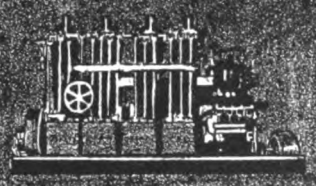

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In the hands of a good steward, a SHIPMATE range will keep the crew feeling "rap full" and ready for duty all the time.

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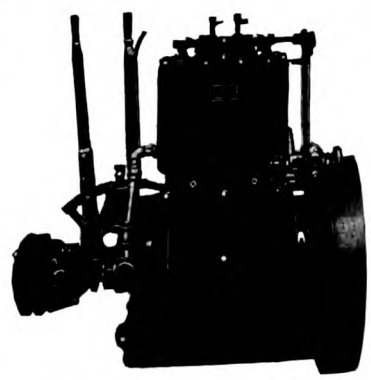
Equipped with N & S Reversible Propeller



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2-cyl., 4-cycle, 16-20 h. p., 350 r. p. m.
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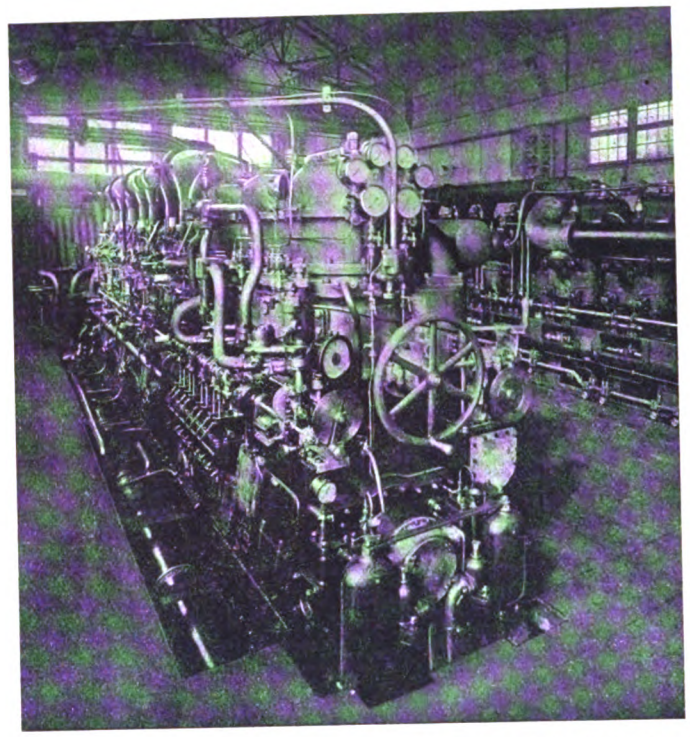
For ONE Motor
(Submarine Type)



A SCHNEIDER 1500 H. P. DIESEL MARINE ENGINE FOR SUBMARINES

LIGHT WEIGHT
(Only 46 lbs. per B. H. P.)

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Make
Compact Installations

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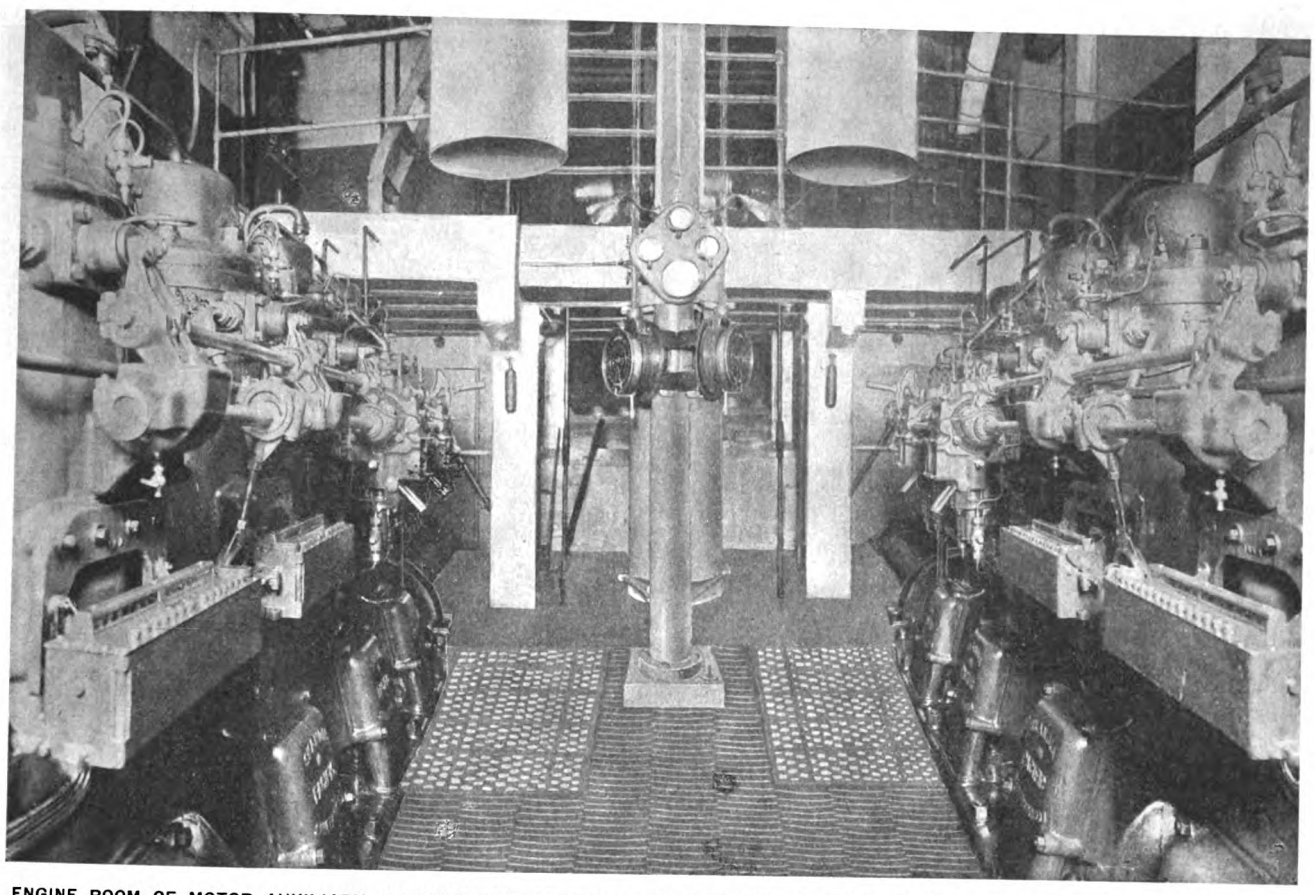

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ENGINE ROOM OF MOTOR AUXILIARY, SHOWING THE SPLENDID INSTALLATION THE TWIN 240 H. P. SKANDIA ENGINES MAKE IN THIS TYPE OF VESSEL

Operate on low gravity, crude or fuel oils

SKANDIA ENGINES

Are Made in Sizes From

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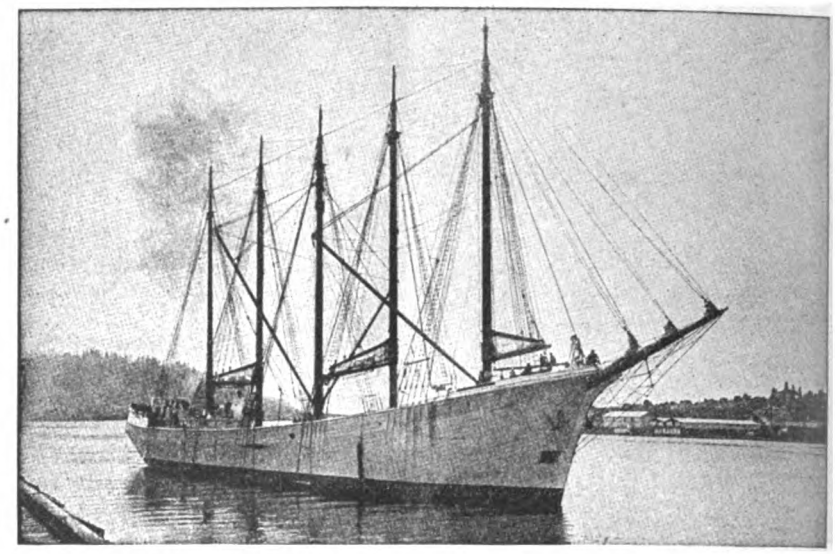

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HIGHEST CLASS WOODEN VESSELS DESIGNED AND CONSTRUCTED

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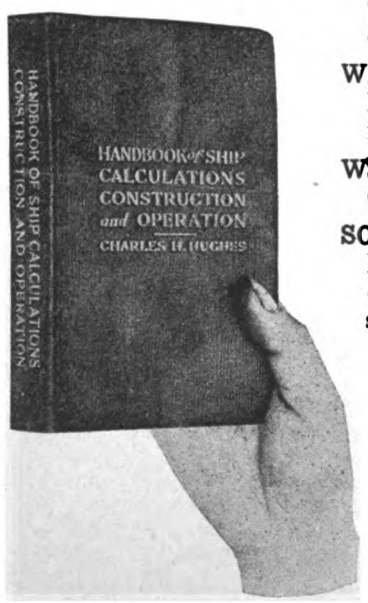
By Chas. H. Hughes



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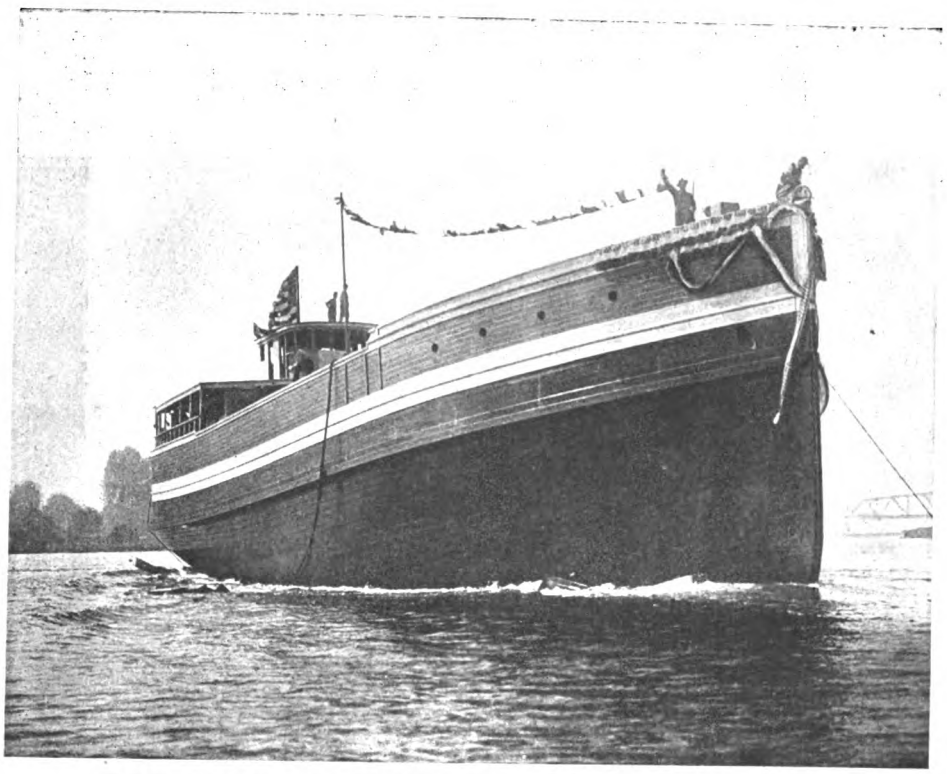
ATLAS FULL DIESEL TYPE ENGINE

SERVICE RELIABILITY POWER

ATLAS-IMPERIAL

DIESEL ENGINES BUILT

IN SIZES From 110 to 1200 B. H. P.



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IN SIZES From 4 to 250 B. H. P.

FREIGHTER "APEX" EQUIPPED WITH 350 H. P. ATLAS DIESEL

Mr. Lee H. Wakefield, the owner of the "Apex" is also the owner of seventeen boats installed with Atlas engines, two of these being Atlas Diesels. Mr. Wakefield selects the Atlas knowing that it is the best engine obtainable and that their service is unequaled.

AN ENGINE NOT AN *EXPERIMENT*

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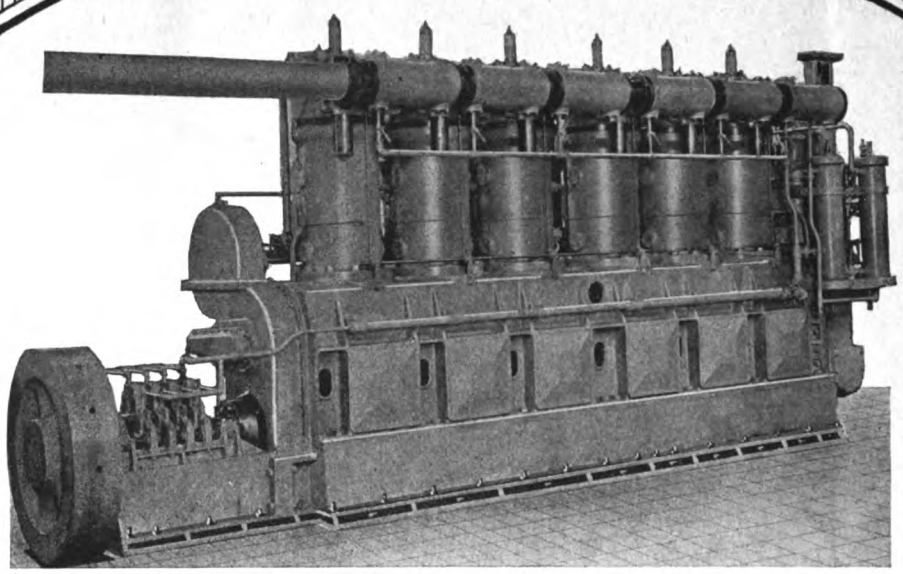

500 B. H. P. DIESEL TYPE REVERSIBLE MARINE ENGINE

These MARINE ENGINES are the result of EIGHTEEN YEARS' Stationary and marine DIESEL ENGINE EXPERIENCE and THIRTY YEARS' EXPERIENCE in building the LARGEST and HIGHEST GRADE OF STEAM ENGINES.

These engines are built in the LARGEST and most COMPLETELY EQUIPPED PLANT in this country devoted EXCLUSIVELY to the building of Diesel Type Oil Engines.

SHIP OWNERS AND SHIPBUILDERS should avail themselves of these facilities.

SIZES AVAILABLE: 300, 500, 750, 1200 and 1350 B. H. P. per shaft.

ALL SIX-CYLINDER, ALL FOUR-CYCLE, and all directly REVERSIBLE MODELS.

MARINE DIESEL TYPE ENGINES STATIONARY

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CORRECT LUBRICATION
FOR DIESEL AND SEMI-DIESEL ENGINES

For the correct lubrication of internal-combustion engines ---Hot Ball Ignition, Surface Ignition, Semi-Diesel, or Diesel type---use

CALOL DIESEL ENGINE OIL OR CALOL DIESEL ENGINE OIL HEAVY

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service.

At points named below and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

CORRECT FUEL FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil.

Fuel oil for the Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
For Diesel and Semi-Diesel Engines

Operators of Diesel engines should note that if the fuel contains too large a percentage of high boiling constituents complete combustion with the fuel will not be realized. The products of an incomplete combustion are tar, asphaltum and free carbon. These products form a sticky deposit on the valves which prevents their proper operation. This results not only in poor compression and loss of power, but in an excessively high fuel consumption. Tar and asphaltum also deposit themselves behind the Piston rings, which causes them to score the cylinders and prevent efficient lubrication of the Piston. This sticking of the Piston is often blamed on the Lubricating Oil.

"Safety first" dictates that the flash point should be high enough to insure safety to oil in storage or in the bunkers.

In addition the Fuel Oil should have a fluidity that permits it to be readily pumped at all working temperatures.

Uniformity is necessary in fuel oil, so as to eliminate the alteration of valves and air pressure for each run of fuel oil.

To produce a fuel oil that embodies all these necessary qualities it requires an intimate knowledge of the Diesel engine itself and the refining experience and equipment to turn out fuel oil to specifications.

Calol Fuel Oil is the result of scientific investigation and a carefully worked out process of preparation.

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

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By barge at:

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Standard Oil Company

(CALIFORNIA)

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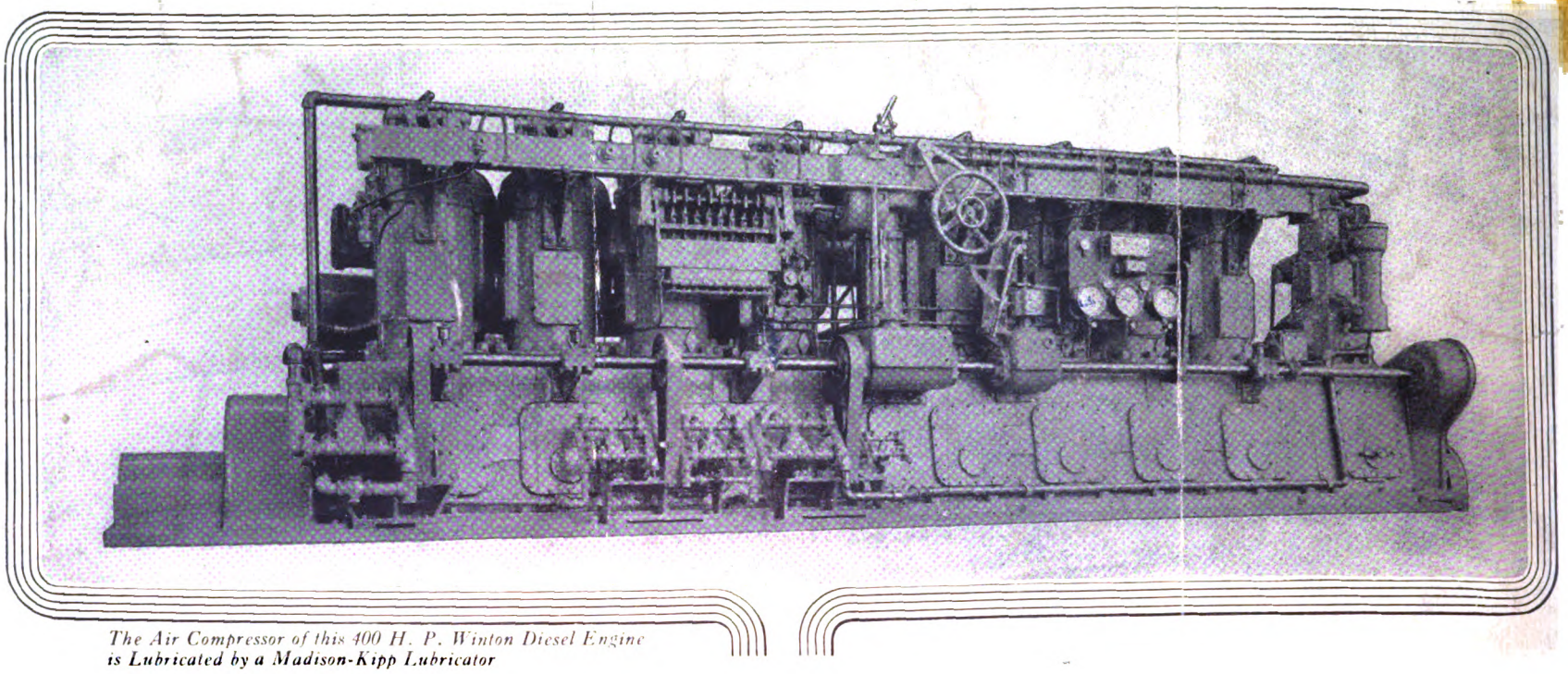

The Air Compressor of this 400 H. P. Winton Diesel Engine is Lubricated by a Madison-Kipp Lubricator

They Save by Using Oil but Once

THE low-grade fuel of Diesel, hot-surface, and other compression-ignition types of motors pollutes lubricating oil.

In some marine types of such motors, this carbon and sediment fouled lubricant is pumped back into the cylinders.

Even if it has been strained, an undue amount of gumming, fouling, and grinding wear are sure to follow.

In consequence more and more marine motor-builders are using Madison-Kipp Lubricators which use oil but once.

They Diminish Oil Consumption and Repairs

The feed adjustments of these lubricators can be easily and accurately made.

In consequence both laboratory and service tests show a saving of from 10 to 40 per cent. of lubricant.

Far more important is the long life they insure for the motor's wearing parts.

They even insure against accidental lack of lubrication because of the unfailing action of the Kipp valveless principle.

They Maintain Motor Power

The "live" oil principle of the Madison-Kipp insures the maximum compression absolutely essential to heavy duty motors by furnishing perfect oil-seal.

Used oil, even when thoroughly strained, does not make a good oil seal, for much of its lubricating quality has been destroyed by use.

Even more of its value is lost through adulteration with condensed fuel that cannot be strained out.

For All Types of Motors

In cross-head types it may be possible to use the Madison-Kipp for motor lubrication only, relying on strained sump oil for bearings.

In trunk-piston types, the Madison-Kipp "live-oil" system is indispensable for both.

Not only on many types of marine motors, but also on two out of every three farm tractors and on steam hammers, dredges and compressors the Madison-Kipp is standard.

We can make immediate deliveries, for our factory is the largest in the world devoted to lubricator manufacture.

The Madison-Kipp Lubricator Co.
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Madison-Kipp Lubricators

VALVELESS FORCE-FEED

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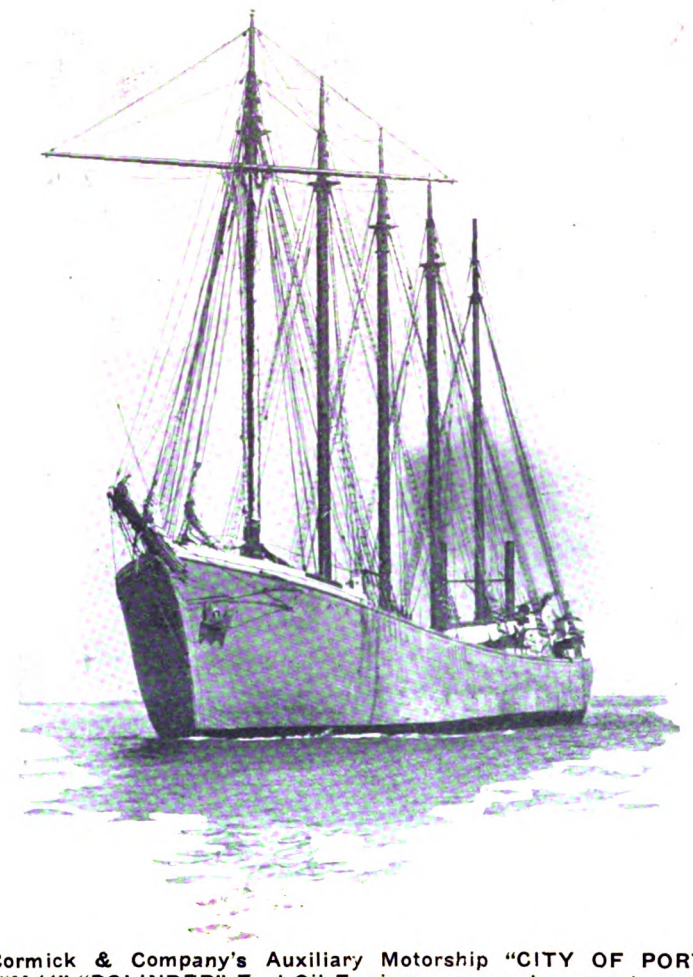
BOLINDER'S

55,000 B. H. P. of Bolinder's Engines Now in Use in All Parts of the World

Present Sales and Yearly Output 100,000 B.H.P.



Present U. S. A. Bolinder Installations 55,000 B. H. P.

Messrs. Chas. R. McCormick & Company's Auxiliary Motorship "CITY OF PORTLAND," equipped with two 320 B. H. P. Model "M-11" "BOLINDER" Fuel Oil Engines, now on her way to an Atlantic Port, completed the first lap of the journey from San Francisco to Balboa in the good time of 17 days and 18 hours. The second lap from Colon, Panama, to Portland, Me., was completed in less than 14 days.. As good as steamer time. The "CITY OF PORTLAND" was the first large auxiliary Motorship constructed on the Pacific Coast and has now been in commission for nearly two years.

Craft under construction and to be fitted with "BOLINDER" Engines in the United States alone aggregate over 145,000 tons; "BOLINDER" Engines now in service, over 12,500

The Bolinder

THE ENGINE THAT IS NOT A DIESEL
THE ENGINE THAT IS NOT A SEMI-DIESEL
THE ENGINE THAT IS THE BOLINDER
THE STANDARD FOR SURFACE-IGNITION FUEL OIL ENGINES

An example of the ruggedness of the "BOLINDER" Engine was displayed in the case of the M. S. "ASTRI" recently. This vessel encountered a hurricane off Mazatlan and became severely strained, resulting in the flooding of the engine room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

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S. S. "HAWAIIAN"—8,000 tons
S. S. "IOWAN"—10,000 tons
S. S. "KANSAN"—12,000 tons, twin screw
S. S. "KENTUCKIAN"—10,000 tons
S. S. "MEXICAN"—12,000 tons, twin screw
S. S. "MINNESOTAN"—10,000 tons
S. S. "MONTANAN"—10,000 tons
S. S. "OHIOAN"—10,000 tons
S. S. "OREGONIAN"—8,000 tons
S. S. "PANAMAN"—10,000 tons
S. S. "PENNSYLVANIAN"—10,000 tons
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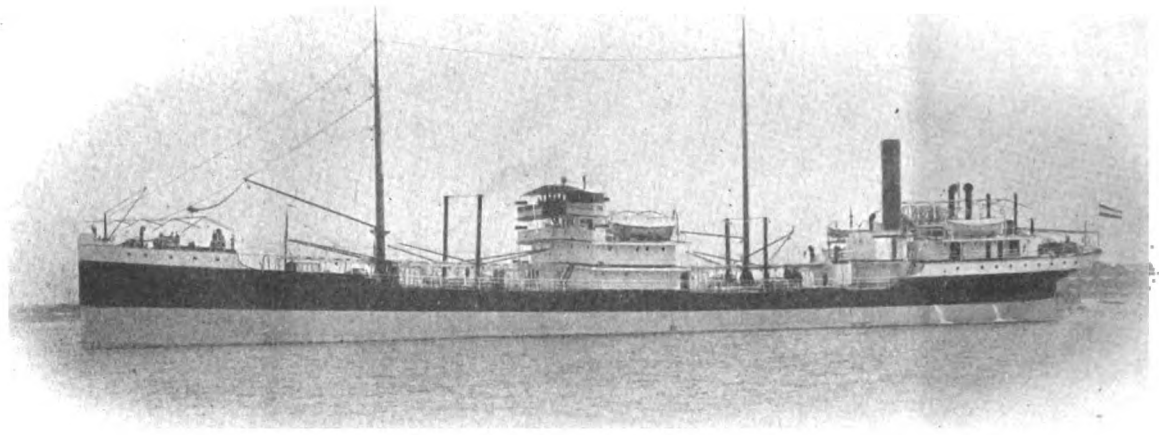
THE FUEL OF THE 20th CENTURY



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Bangkok	Lisbon (completed)	Penang	Sabang	Suez
Batavia	Madras	Portland, Oregon, U. S. A. (building)	Saitozaki	Sydney
Bombay	Melbourne		San Francisco	Tampico
Calcutta	Montreal		San Pedro	Tarakan
Cape Town	Nagasaki		Seattle, Washington, U.S.A. (building)	Thameshaven
Colombo				Vancouver (building)

Note.—During the war it is not possible to keep stocks at some of the above-named ports. It is therefore advisable for intending buyers to enquire whether stocks are available.

Buyers desiring information regarding supplies of and prices for **OIL FUEL** for use in Internal-combustion Engines or for other purposes should apply to **THE ASIATIC PETROLEUM COMPANY, LIMITED**, at the above address.

The Asiatic Petroleum Company also supply **KEROSENE OIL** for use in the smaller Internal-combustion Engines and are prepared o supply **PETROLEUM SPIRITS, LUBRICATING OILS, WAX** and **GREASES** in all far Eastern Markets.

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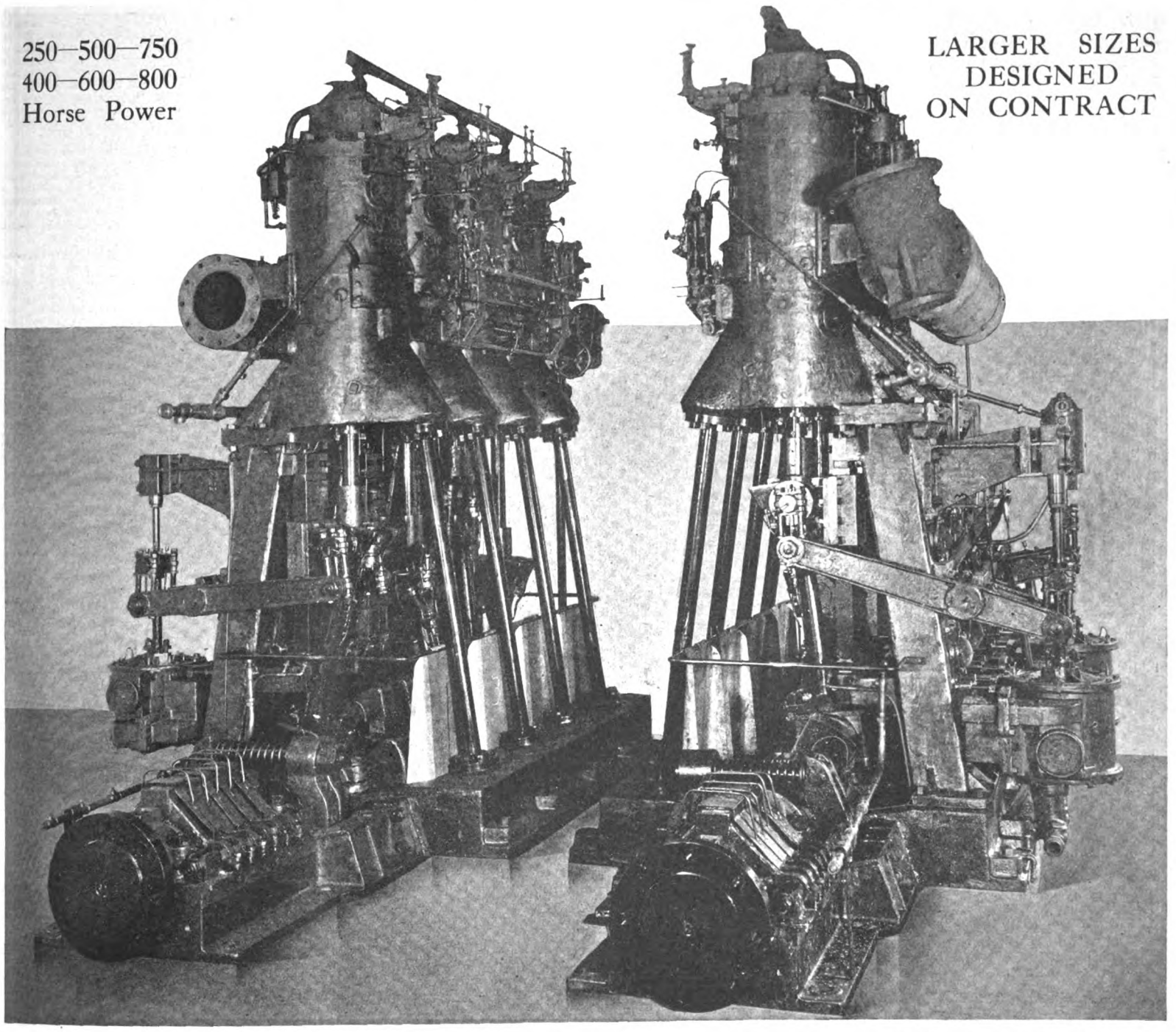
Sumner Marine Heavy Oil Engines

250—500—750
400—600—800
Horse Power

LARGER SIZES
DESIGNED
ON CONTRACT



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EASILY OPERATED

DIRECT REVERSIBLE
4, 6 and 8 CYLINDERS

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GIO. ANSALDO & CO.

Registered Office, Rome

Administrative and Industrial Office, Genoa, Italy

THE GIO. ANSALDO & C. WORKS, founded by the PRIME MINISTER CAVOUR in 1853 under the Direction of the distinguished engineer, GIOVANNI ANSALDO, had, especially under the subsequent Management and Direction of the Bombrini Brothers, a prosperous career, during which the manufacture was extended from early Locomotives to Marine Engines and to Shipbuilding and other Naval Work. The greatest impulse, however, was given by the late Comm. Ferdinando Maria Perrone in 1904, when the Firm was transformed into the present LIMITED SOCIETY to attain wider scope, which has now been fully realized by his Sons. The original WORKS OF SAMPIERDARENA and the SHIPYARD OF SESTRI PONENTE have recently been greatly enlarged and augmented by other ESTABLISHMENTS and associated CONCERNS, devoted not only to mercantile and Naval Shipbuilding in all its branches, but also to armour plate, guns, and war material of all kinds.

The SOCIETY has at present at work, in its own 28 ESTABLISHMENTS and other associated CONCERNS as hereunder enumerated, about 50,000 hands, men and women, and is capable of building and is building:—

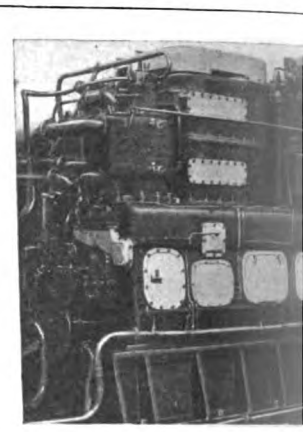
1st—Warships and mercantile vessels of all kinds and sizes from big Super-dreadnoughts and ocean liners to destroyers, torpedo boats, submarines, cargo steamers, tug boats, motor boats, etc.
2nd—Diesel marine oil engines up to 2,000 b. h. p., also marine steam propelling engines, both reciprocating and turbine engines with and without gearing.
3rd—Steam boilers, both water-tube and cylindrical, of all types and sizes.
4th—Locomotives and tenders complete, and Machine Tools.
5th—Armour plates, guns, armoured turrets complete, ammunition complete, metallic cartridges and casings.
6th—Auxiliaries for propelling machinery, and all kinds of auxiliary machinery for ships, such as steering gears, capstans, winches, distilling condensers, and screw propellers.
7th—Dynamos and all electric appliances, auxiliary electric machinery both for ship and land service, electric gear for turrets and guns, elevators, steering gears, electric capstans and winches, cranes and electric propelling machinery.
8th—Aeroplanes and their motors.
9th—Steel, cast iron and bronze castings of all varieties and sizes.
10th—Steel forgings of all kinds and sizes, special steels, and Files.
11th—Boiler steel tubes, steel, iron, copper and brass pipes.
12th—Furniture of all descriptions, both wood and metallic, for warships, liners and mercantile vessels.

List of Establishments

1.—General Engineering Works	SAMPIERDARENA
2.—Locomotive Construction Works	SAMPIERDARENA
3.—Artillery and Big Gun Works	SAMPIERDARENA
4.—War Munition Works	SAMPIERDARENA
5.—Aeroplane Motor Works, San Martino	SAMPIERDARENA
6.—Cast Steel Foundry	CORNIGLIANO LIGURE
7.—Armour Plates and Forging Plant	CORNIGLIANO LIGURE
8.—Oxygen and Hydrogen Production Plant	CORNIGLIANO LIGURE
9.—New Artillery and Big Gun Works	CORNIGLIANO LIGURE
10.—Electric Products Plant	CORNIGLIANO LIGURE
11.—Bronze Foundry	CORNIGLIANO LIGURE
12.—Delta Metal and Alloys Foundry	CORNIGLIANO LIGURE
13.—Brass Cartridge Works	CORNIGLIANO LIGURE
14.—Internal-Combustion Engine Works	CORNIGLIANO LIGURE
15.—Aeroplane Works No. 1 (Marine Hangars)	BORZOLI (Mare)
16.—Aeroplane Works No. 2	BOLZANETO
17.—Aeroplane Works No. 3	TORINO (Corso Peschiera 251)
18.—Tube Mills	FEGINO (Val Polcevera)
19.—Projectile-Case Works	FEGINO
20.—Naval Shipyard	SESTRI PONENTE
21.—Saw Mill and Boat Yards	VOLTRI
22.—Ammunition Works	SESTRI PONENTE
23.—Cast Iron Foundry	PEGLI
24.—Fire Brick Plant	STAZZANO (Serravalle Scrivia)
25.—Genoa Shipyards	MOLOGIANO (Porto di Genova)
26.—Iron Mines	COGNE (Valle d'Aosta)
27.—Electric Furnaces for Steel and Pig Iron and Rolling Mill	AOSTA
28.—Special Alloys Plant	AOSTA

Associated Concerns

1.—Shipyard and Works, Savoia	CORNIGLIANO LIGURE
2.—Shipyard and Works, Fiat San Giorgio	SPEZIA
3.—Internal-combustion Engine Works, Fiat San Giogio	TORINO
4.—Ore Mines	COGNE (Val d'Aosta).
5.—Italian National S.S. Company	GENOVA
6.—Lignite Mines	GROSSETO (Tuscany).
7.—Cerpelli's Centrifugal and Turbine Pump Works	LA SPEZIA
8.—Westinghouse Company	VADO LIGURY
9.—Magnesite Mines	QUAREIDUELLO (Tuscany)
10.—Insulators Company	LEGHOURN



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THE ANSALDO-BUILT BAT
THE ROYAL

SUBMARINE

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each

Now Building at Sestri Ponente

American Branch: 80

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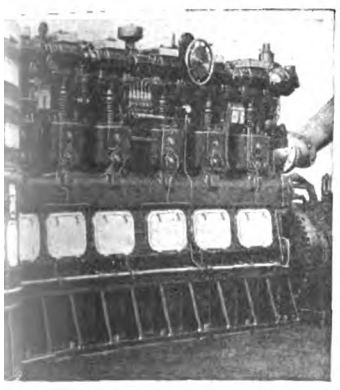

ED MOTOR, 1350 B. H. P.

SHIP "GULIO CESARE" OF ALIAN NAVY

SAN GIORGIO"

den Lane, New York City

SHARE CAPITAL
22 MILLIONS OF LIRE (Fully Paid)

ANSALDO-SAN-GIORGIO
(LIMITED)
Ex Fiat-San-Giorgio

Shipyard, Muggiano (Spezia)
Offices and Engine Works, Turin, via Cuneo, 20, Italy

Specialists in the construction of

Diesel and Steam Cargo Vessels, Torpedo Boats, Submarines Diesel-Engined Submarine Chasers and Heavy-Oil Marine Motors

(Type Fiat-San Giorgio)

such as were supplied to the Navies of

Brazil, Denmark, Great Britian, Italy, Portugal, Spain, Russia, Japan, United States and Sweden, and Germany (before the war)

Complete Construction of War and Merchant Ships. Cargo and Passenger Vessels of any Capacity. Ships equipped and repaired.

Heavy-Oil Marine Motors, type Fiat-San Giorgio, for War and Merchant Ships of any capacity.

The Fiat-San Giorgio plants, which now show a continuous industrial development, will employ from 18,000 to 20,000 workingmen during the current year.

The Italian Emergency Fleet

The Spezia Shipyard every year will launch not less than 18 standardized Diesel Motorships of 8,100 to 10,000 tons D. W. capacity each, with complete equipment and machinery built by the FIAT-SAN GIORGIO exclusively, while the output of submarines and torpedo-boats will remain undiminished.

Guaranteed Results for Merchant Ship Motors (Model 2 cy.—175=1200 b. h. p.)

—Reversing Motors from full ahead to full astern done in ten seconds.

—Fuel Consumption two-cycle engines, 0.45 lbs. heavy oil, high density containing up to 20% Pitchy and Tarry Matters.

—Lubricating Oil Consumption, 0.017 lbs.

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each
Now Building at Muggiano (Spezia)

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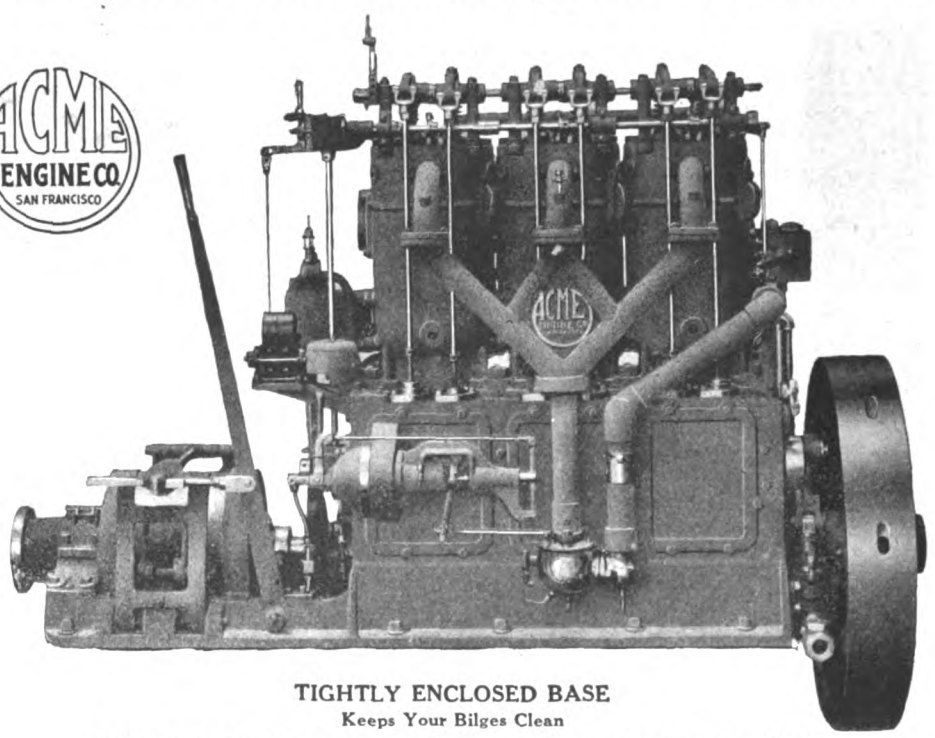
ACME ENGINE CO. SAN FRANCISCO



TIGHTLY ENCLOSED BASE
Keeps Your Bilges Clean

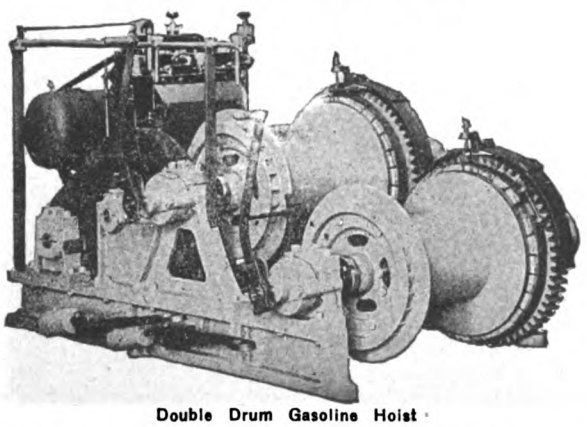
Before Buying Your Next Engine, Send for Catalog and Specifications of the ACME

Address ACME ENGINE CO., FIRST and MINNA STS., SAN FRANCISCO, CALIFORNIA

LIDGERWOOD

STEAM, ELECTRIC AND GASOLINE

HOISTS



Double Drum Gasoline Hoist

Every part of our Gasoline Hoist designed for the maximum power of the motor.

The same care in design, same quality of workmanship and material that have made the Lidgerwood steam and electric hoists the accepted standard in hoist practice, are put into the Lidgerwood Gasoline Hoists.

HOISTS FOR ALL CONTRACTORS' PURPOSES.

More than 39,000 Hoists built and used

Lidgerwood Manufacturing Co.

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LOS ANGELES CHICAGO PITTSBURG PHILADELPHIA
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FOR SALE

IMMEDIATE DELIVERY

A Pair of New 500 H. P. 6 Cylinder

McIntosh & Seymour Marine Oil Engines

(185 R. P. M.)

This power plant was built for ships, the construction of which was given up on account of the war

COX & STEVENS

15 William Street **New York**

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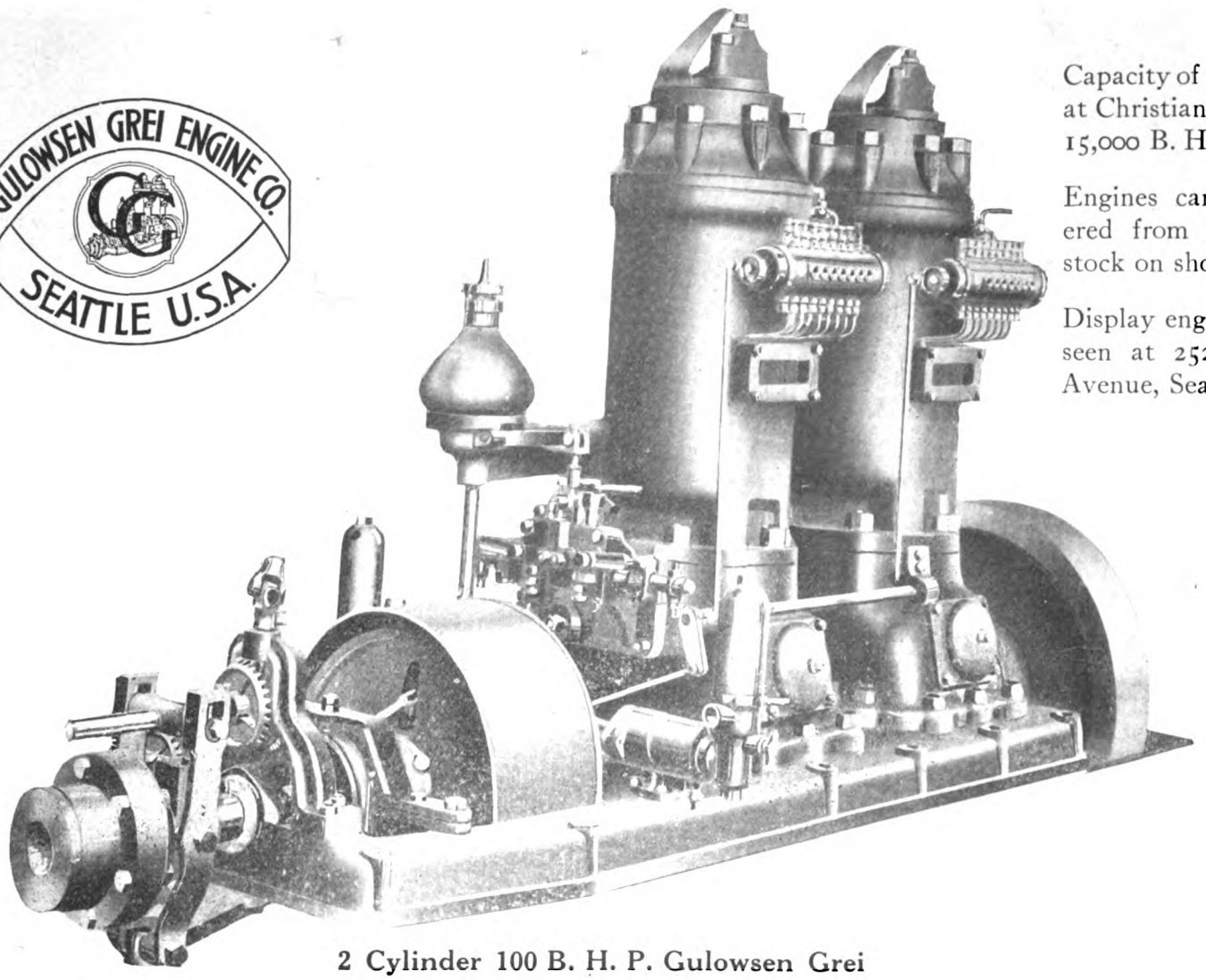
The Gulowsen Grei Engine

GULOWSEN GREI ENGINE CO. SEATTLE U.S.A.



Capacity of Factory at Christiania, Norway, 15,000 B. H. P.

Engines can be delivered from New York stock on short notice.

Display engine may be seen at 2523 Western Avenue, Seattle, Wash.

2 Cylinder 100 B. H. P. Gulowsen Grei

The Gulowsen Grei Heavy Oil Motor has for years been the standard for the Norwegian fishing fleet

Maintaining Simplicity of Design and Low Fuel Consumption

It Is Efficient and Trustworthy

Suitable for All Types and Sizes of Workboats

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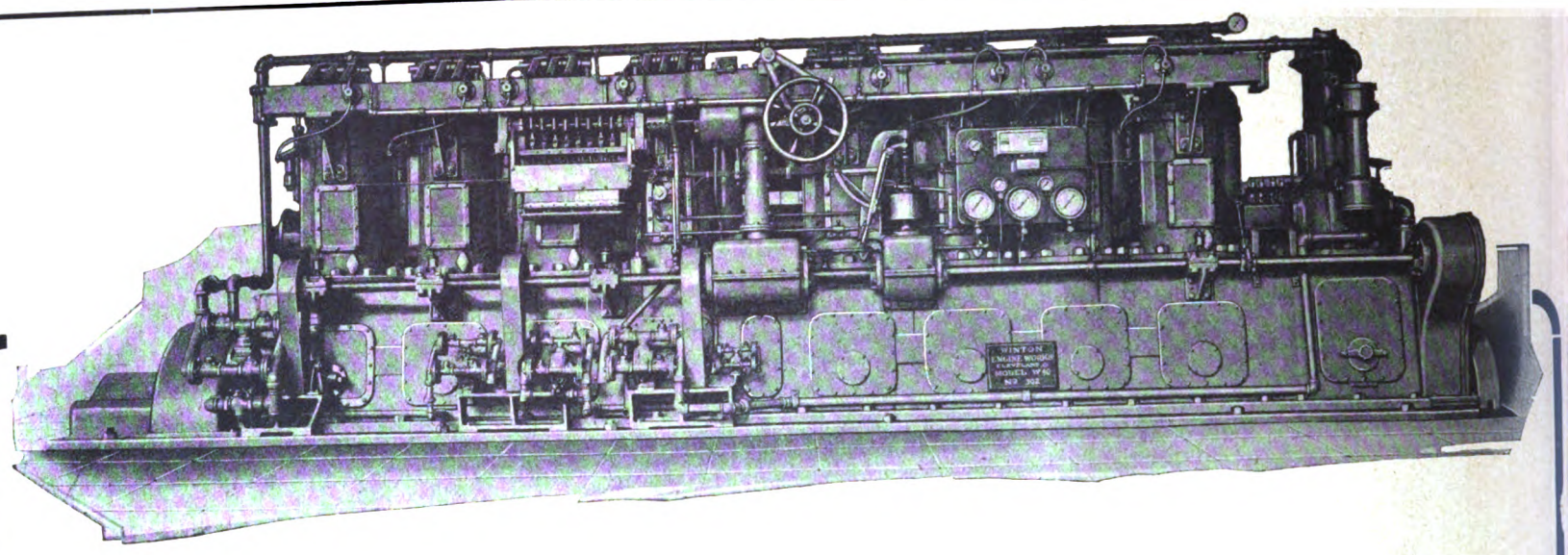
WINTON
DIESEL OIL ENGINES
for MARINE SERVICE



OPERATING SIDE---500 H. P. UNIT

¶ Of American design with all complications of foreign designs eliminated

¶ Simple in operation, consequently easy to obtain competent engineers

¶ Rugged in its construction and Reliable in its operation

BUILT IN SIZES FROM 200 H. P. TO 1000 H. P.
IN A SINGLE UNIT

Winton Engine Works, Cleveland, Ohio, U.S.A.

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SIMPLIFIED ARC WELDING EQUIPMENT

Now Ready to Demonstrate

Before ordering your welding equipment investigate the General Electric Company's novel welding system. Some of its points of superiority are:

1. **Constant Energy**
2. **Shortest known arc**
3. **High efficiency**
4. **Resistance in series with arc**

By the use of this equipment good operators are producing consistently perfect welds.

We are prepared to demonstrate this equipment and make good deliveries.

(43-42)

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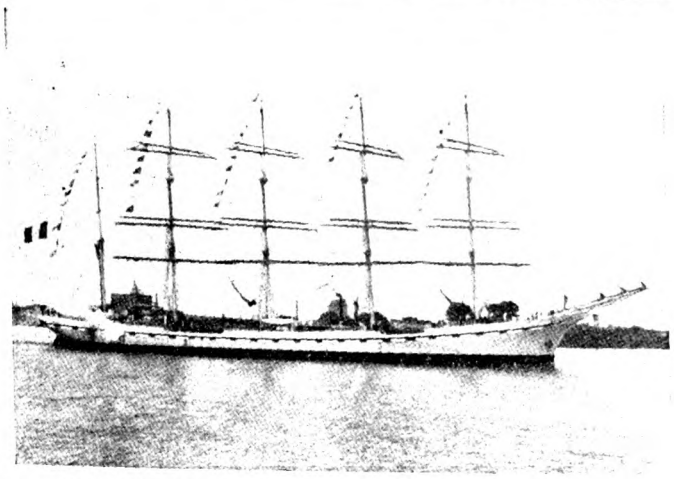
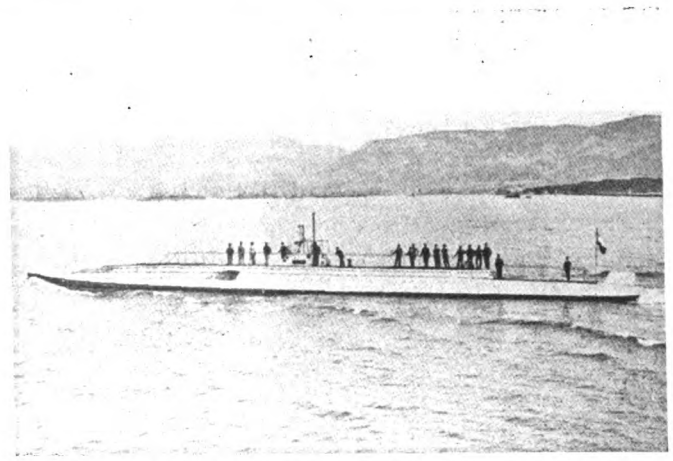


"LA FRANCE," FITTED WITH TWO 900 B. H. P. SCHNEIDER-DIESEL MARINE ENGINES

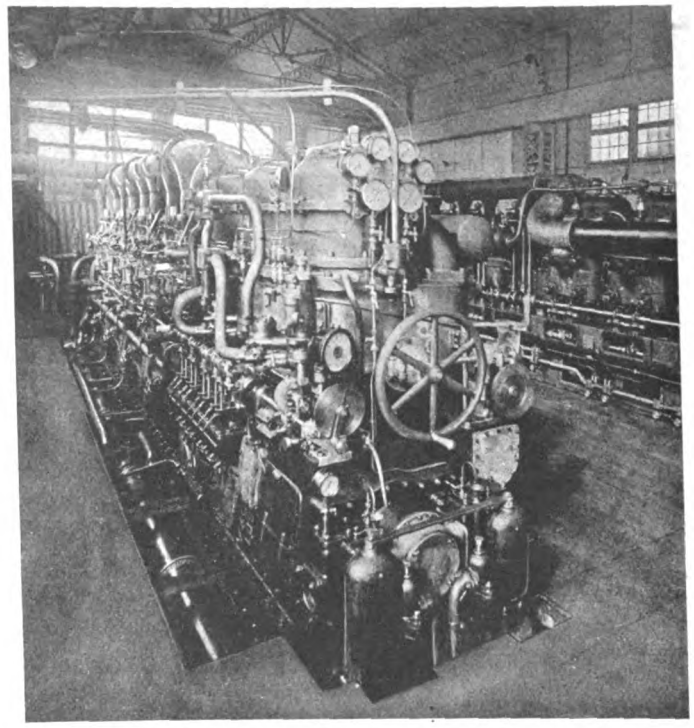


A LARGE SUBMARINE BUILT AND DIESEL-ENGINED BY SCHNEIDER & CIE.

POWERS PER ENGINE

700
1500
and
2400
H. P.

For ONE Motor
(Submarine Type)



A SCHNEIDER 1500 H. P. DIESEL MARINE ENGINE FOR SUBMARINES

LIGHT WEIGHT
(Only 46 lbs. per B. H. P.)

STRONGLY BUILT

EFFICIENCY
(0.400 lb. of Fuel Oil per B. H. P.)

Two and Four-Cycle Diesel Engines for War and Merchant Ships

SCHNEIDER & CIE

HEAD OFFICE AND GENERAL MANAGEMENT
42 RUE D'ANJOU, PARIS (8E)
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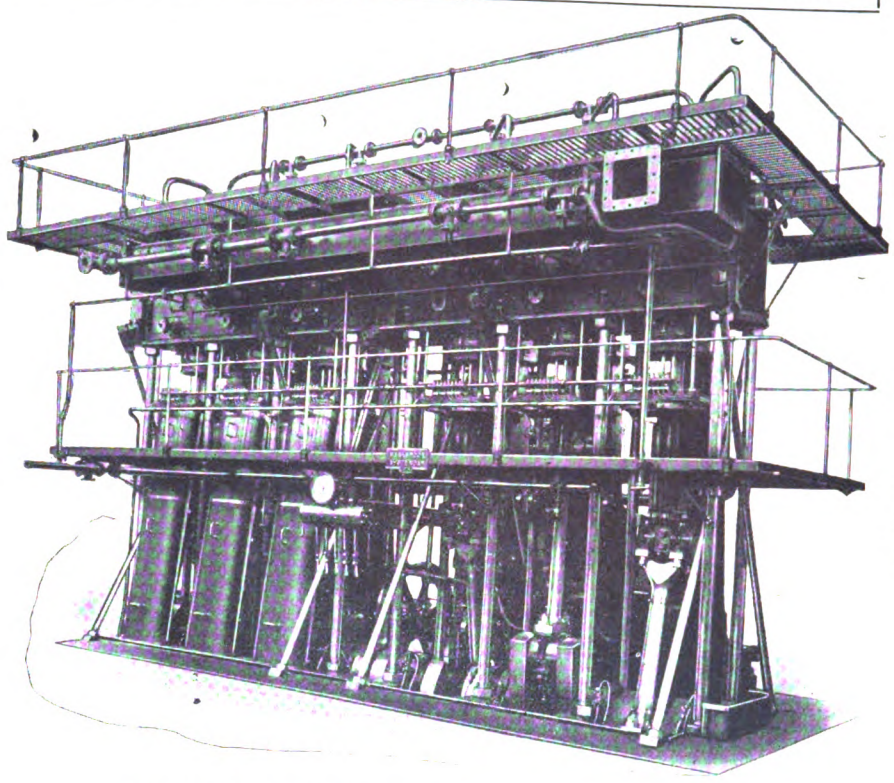
AMSTERDAM WERKSPOOR HOLLAND

THE SUPEREMINENT ATTAINMENT CF MARINE OIL-ENGINE DESIGN



THE WERKSPOOR FOUR-CYCLE TYPE DIESEL MARINE ENGINE

ALL APPLICATIONS FOR THE FINAL U. S. A. MARINE CONSTRUCTIONAL LICENSE WILL RECEIVE PROMPT ATTENTION.

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New York City, U. S. A:

U. S. A. Licensees

NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

SKANDIA-PACIFIC OIL ENGINE CO., SAN FRANCISCO, CAL.

NEWPORT NEWS SHIPBUILDING & DRY DOCK CO., NEWPORT NEWS, VA.

Werkspoor Have Built or Are Building

48 Diesel Marine	Engines =	36,800 b. h. p.
76 Diesel Auxiliary	Engines =	2,605 b. h. p.
261 Diesel Stationary	Engines =	32,816 b. h. p.
Total, 385 Diesel-type	Engines =	72,221 b. h. p.

There Now Is Available

ONE U. S. A. MARINE CONSTRUCTIONAL LICENSE, ONE OR MORE STATIONARY ENGINE LICENSES

or a

COMBINED MARINE AND STATIONARY LICENSE

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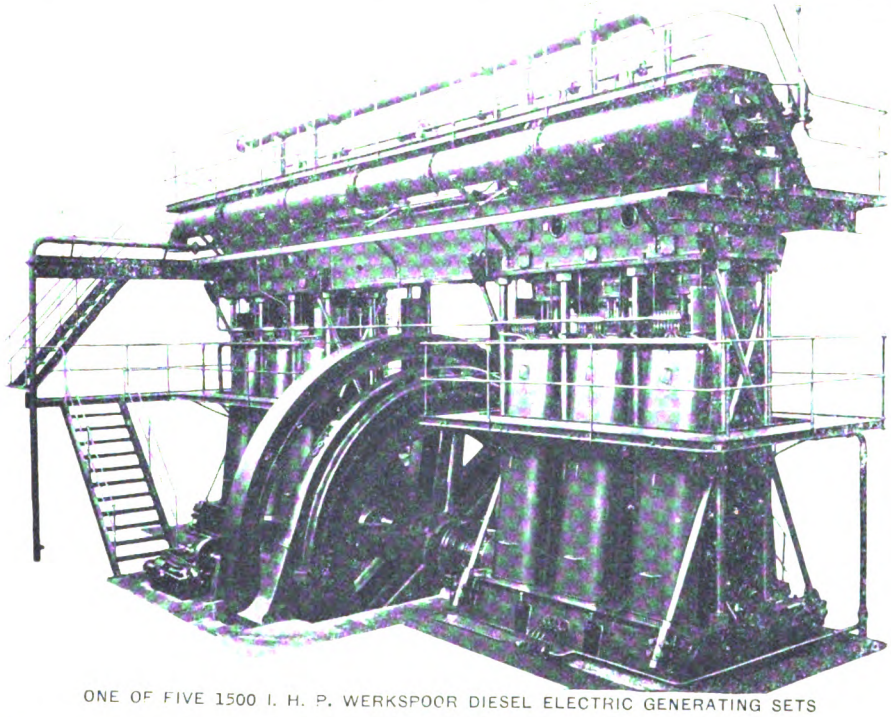

RELIABILITY

ONE OF FIVE 1500 I. H. P. WERKSPOOR DIESEL ELECTRIC GENERATING SETS

Builders of the FIRST full-powered ocean-going DIESEL Motorship

DIESEL MARINE TYPE ENGINES

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Here's Your Chance to Get a First-Class Rebuilt Engine

Ask for a Description of Whatever Sizes Interest You *Our Guarantee Is Your Protection*

Exchange your present engine for a new one. We will make you a most liberal allowance.

Our leaders: Sterling, Kermath, Gray-Prior, Missouri, Universal and Doman, 4-cycle; Eagle, Hartford, Cady and Arrow, 2-cycle.

Burnoil, heavy duty, 4-cycle, heavy oil engines, quick starting, economical, easy to operate

ALL OF OUR ENGINES ARE MOST CAREFULLY REBUILT IN OUR SHOPS BY OUR OWN SKILLED MECHANICS AND ARE FULLY GUARANTEED

Quotations on our rebuilt motors are subject to prior sale. We therefore request that you wire us to hold for you the motor which you select, following with deposit by first mail. There will be a nominal charge made for crating, according to the size of engine

Description	Price
225-250 H.P. Sterling, 8 cyl., 4 cycle, high speed type, used very little and fully guaranteed, with carburetor, Bosch 2-point ignition, reverse gear, etc.	$2000
225 H.P. Sterling, 8 cyl., 4 cycle, 5½ x 6¾, double valve, bronze base, 2 carburetors, magneto, reverse gear, new	2500
225 H.P. Jencick, 8 cyl., 4 cycle, 7½ x 7½, excellent condition, carburetor, coil, Bosch magneto and magnetic M. & B. ignitors, reverse gear, mechanical oiler, propeller; as is	2500
One 200 H.P. Sterling engine, 8 cyl., 4 cycle, 8¼ x 10, model D, heavy duty, with magnetos, coils, reverse gear, etc., brand new. Can be fitted to operate on kerosene	6800
175 H.P. Jencick, 6 cyl., 4 cycle, 7½ x 7½, carburetor, Bosch magneto, and magnetic M. & B. ignitors, reverse gear	1600
150 H.P. Buffalo, 6 cyl., 4 cycle, 9 x 11, carburetor, Bosch magneto, coil, air starting	4000
135 H.P. Sterling, 6 cyl., 4 cycle, 5½ x 6¾, double valve, aluminum base, with carburetor, reverse gear, magneto, new	1800
125 H.P. Winton, 6 cyl., 4 cycle, 8 x 11, carburetor, magneto coil, reverse gear	3800
120-170 H.P. Sterling, 8 cyl., 4 cycle, 5½ x 6¾, 1917 type FM, nearly new, carburetor, magneto coil, reverse gear, electric starter, propeller	2950
100 H.P. Blanchard, 4 cyl., Semi-Diesel, oil burning, 10" x 10", mechanical oiler, reverse gear, air tank, and propeller outfit, weight 11,000 lbs.	6500
100 H.P. Sterling, 8 cyl., 4 cycle, 5½ x 6, carburetor, coil, Bosch high tension magneto, reverse gear, oiler, propeller. Excellent condition	1250
70 H.P. Thelma, 6 cyl., 4 cycle, 5⅛ x 5½, with Bosch magneto, coil, spark plugs, carburetor, reverse gear and propeller, practically new, 1914 model, weight 1000 lbs.	950
70 H.P. Speedway, 6 cyl., 4 cycle, 6 x 6, with carburetor, coil, spark plugs, reverse gear	1000
60-70 H.P. Brown, 6 cyl., 2 cycle, 1909, A-1 condition, Atwater Kent ignition, Bosch high tension magneto, Kingston carburetor, 5¼ x 4½, aluminum base, 800 lbs., factory overhauled, like new	500
65 H.P. American-British, 6 cyl., 4 cycle, carburetor, Bosch H. T. magneto, coil, spark plugs, reverse gear, propeller, splendid condition	750

Description	Price
60 H.P. Speedway, 6 cyl., 4 cycle, 6 x 6, with carburetor, magneto, coil, reverse gear and propeller	1200
52 H.P. Mercury, 4 cyl., 4 cycle, 5¼" x 5", coil, carburetor, magneto, reverse gear, mechanical oiler, rear starter	600
50-65 H.P. Craig, 4 cyl., 4 cycle, carburetor, coil, K-W magneto, reverse gear, propeller outfit	2500
50 H.P. Speedway, 4 cyl., 4 cycle, 6 x 6, with carburetor, coil, spark plug and reverse gear	750
50 H.P. Automatic, 4 cylinder, 4 cycle, 7½ x 9, with carburetor, coil, magneto, reverse gear and propeller	1200
48 H.P. Barber, 4 cyl., 2 cycle, carburetor, coil, Bosch magneto, spark plugs, etc., 6½ x 6¼, weight 1400 lbs.	250
45-75 H.P. Sterling, 5½ x 6, carburetor, Bosch Dual magneto and coil, reverse gear, propeller, 6 cyl., 4 cycle	1400
45-65 H.P. Sterling, 6 cyl., 4 cycle, 5½ x 6, carburetor, coil, magneto, reverse gear and propeller	1250
40-50 H.P. Maximotor, 4 cyl., 4 cycle, carburetor, coil, spark plugs, coupling, weight 250 lbs.	150
40-50 H.P. Hall, 6 cyl., 4 cycle, 5½ x 6¼, carburetor, Bosch magneto, coil, reverse gear, propeller outfit	1400
40-50 H.P. 20th Century, 4 cyl., 4 cycle, 6½ x 8½, with carburetor, Bosch Dual magneto, and coil and reverse gear	1400
40-50 H.P. Speedway, 4 cyl., 4 cycle, 6½ x 8, carburetor, Bosch magneto, coil, spark plug, reverse gear	1600
40 H.P. Sterling, 4 cyl., 4 cycle, 6½ x 8, model D, heavy duty, carburetor, Bosch magneto, and magnetic M. & B. ignitors, also Jump Spark ignition, reverse gear	1600
40 H.P. Peerless, 4 cyl., 4 cycle, carburetor, coil, propeller	250
Two 40 H.P. Lamb, 4 cyl., 4 cycle, 6⅝ x 7, each with carburetor, coil, reverse gear and propeller, twin screw outfit, each For the pair	950 1800
37½ H.P. Automatic, 3 cyl., 4 cycle, carburetor, coil, reverse gear	950
36-45 H.P. Anderson, 6 cyl., 4 cycle, 5 x 6, carburetor, magneto, coil, reverse gear and propeller; nearly new	1000

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Description	Price
30-50 H.P. Allan-King, 4 cyl., 4 cycle, carburetor, Atwater Kent ignition, Paragon reverse gear and propeller	175
Two 30-45 H.P. Sterling, 4 cyl., 4 cycle, 5½ x 6, each with carburetor, coil, magneto, reverse gear and propeller, each	1050
Twin Screw outfit, for the pair	2000
30 H.P. H. L. F. Trebert, 4 cyl., 4 cycle, 4⅞ x 5½, carburetor, coil, reverse gear	300
25-35 H.P. Sterling, 4 cyl., 4 cycle, heavy duty type, 5½ x 8, carburetor, Bosch magneto, coil, reverse gear	1350
25 H.P. Craig, 4 cyl., 4 cycle, 6 x 7, with carburetor, coil, reverse gear and propeller	900
25 H.P. Hubbard, 4 cyl., 4 cycle, 4 x 5, with carburetor, coil and spark plugs	300
25 H.P. Ferro, 3 cyl., 2 cycle, carburetor, spark plugs, and coupling	200
22 H.P. Bridgeport, 2 cyl., 2 cycle, high speed type, carburetor, coupling	195
21 H.P. Mohawk, 3 cyl., 2 cycle, carburetor, muffler, coupling	175
20-35 H.P. Sterling, 4 cyl., 4 cycle, 4⅜ x 5½ aluminum base with carburetor, magneto, coil, reverse gear, etc.	600
20 H.P. Fox, 2 cyl., 2 cycle, carburetor and oiler	150
20 H.P. Gray, 2 cyl., 2 cycle, carburetor, reverse gear, propeller and steel shaft	200
18 H.P. T. & M., 3 cyl., 2 cycle, with carburetor, coil, reverse gear, propeller	195
16-18 H.P. Standard, 2 cyl., 4 cycle, carburetor, coil, magneto, reverse gear and propeller	950
16 H.P. Pearl, 2 cyl., 4 cycle, carburetor, coil, magneto, reverse gear, propeller	375
15-18 H.P. Lackawanna, 2 cyl., 2 cycle, carburetor, coil, muffler, One-Way Clutch, all in excellent condition	160
15-18 H.P. Capitol, 3 cyl., 2 cycle, carburetor, coil, reverse gear	125
15 H.P. Cushman, 2 cyl., 2 cycle, 5 x 5, carburetor, coil, Paragon reverse gear, propeller	180
15 H.P. Van Epps, 3 cyl., 2 cycle, with carburetor, coil, spark plugs, reverse gear, propeller	150
15 H.P. Fulton, 2 cyl., 2 cycle, coil, carburetor, propeller	175
15 H.P. Ferro, 2 cyl., 2 cycle, carburetor, coil, reverse gear	175
15 H.P. Knox, 2 cyl., 2 cycle, with carburetor, coil Paragon reverse gear and propeller	210
15 H.P. Ferro, 2 cyl., 2 cycle, carburetor, spark plugs, and coupling	150
14 H.P. Buffalo, 4 cyl., 4 cycle, carburetor, coil and reverse gear	300
14 H.P. Heinel, 4 cyl., 4 cycle, 4 x 4½, carburetor, coil, reverse gear, propeller	375
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12 H.P. Fairbanks-Morse, 2 cyl., 2 cycle, reverse gear	150
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12 H.P. Hettinger, 2 cyl., 4 cycle, 5½ x 6, with carburetor, coil, reverse gear	375
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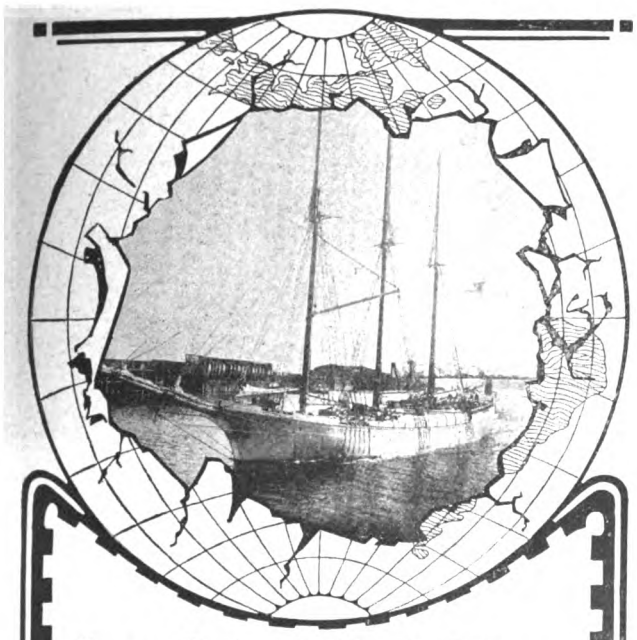

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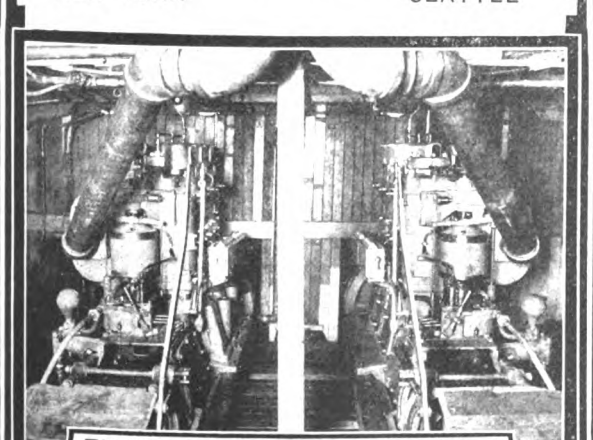

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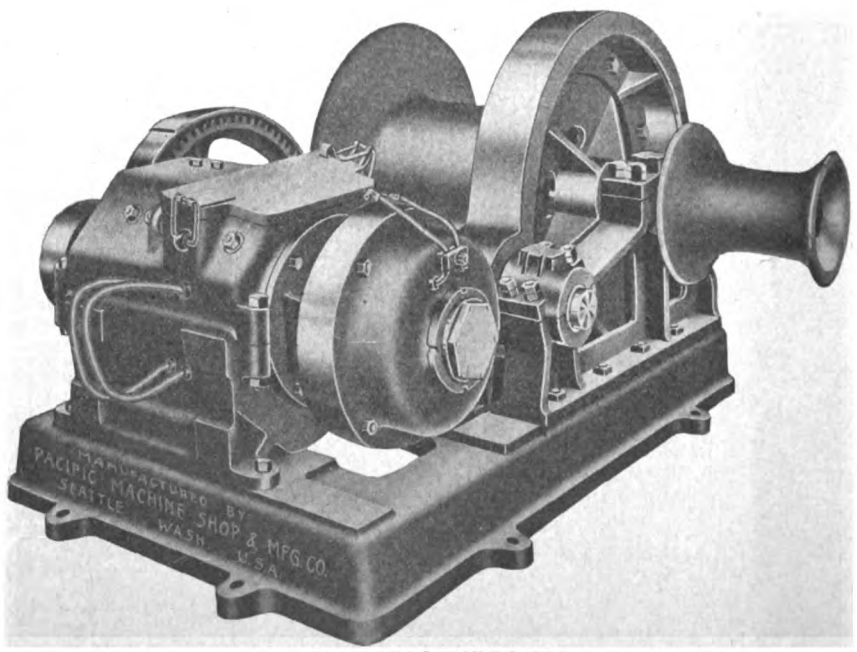

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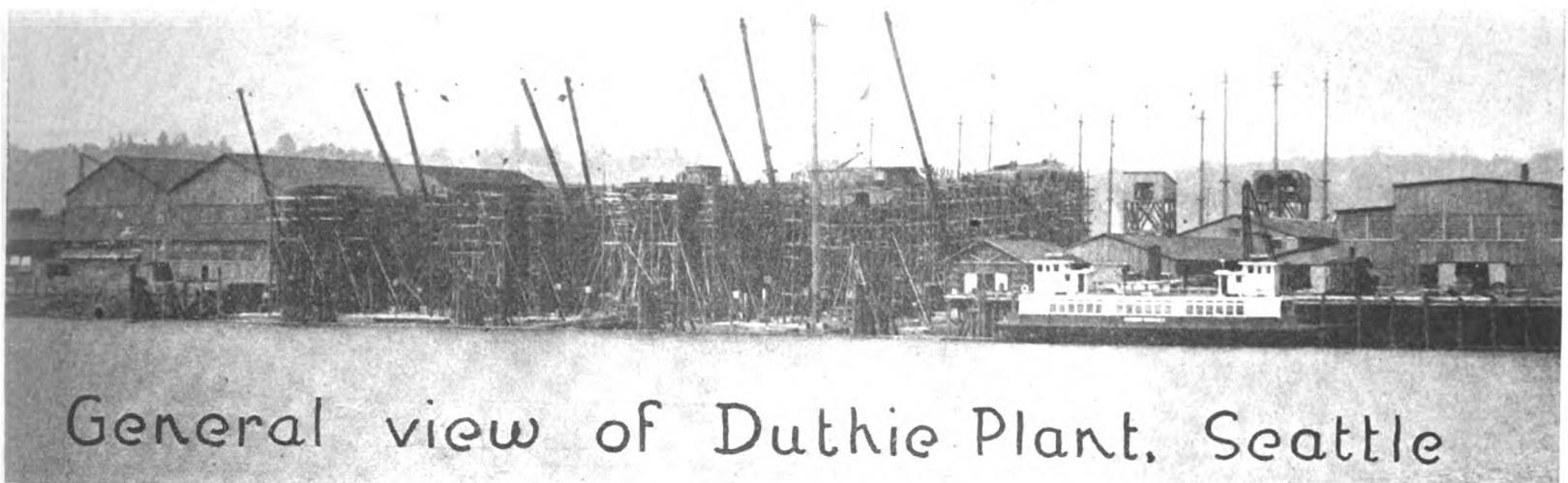

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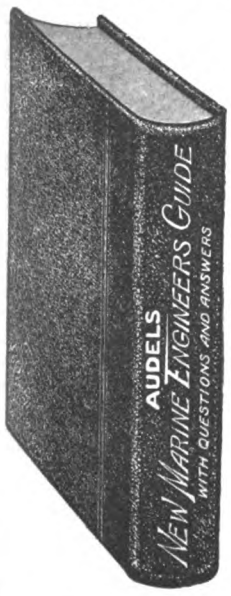

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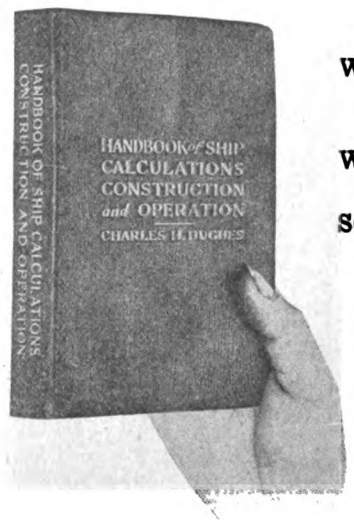

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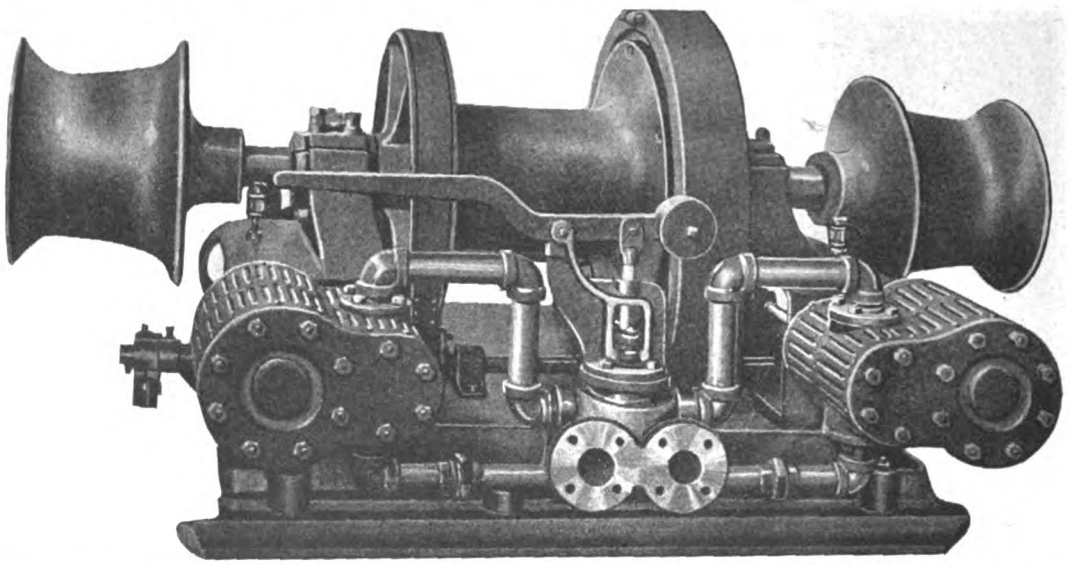

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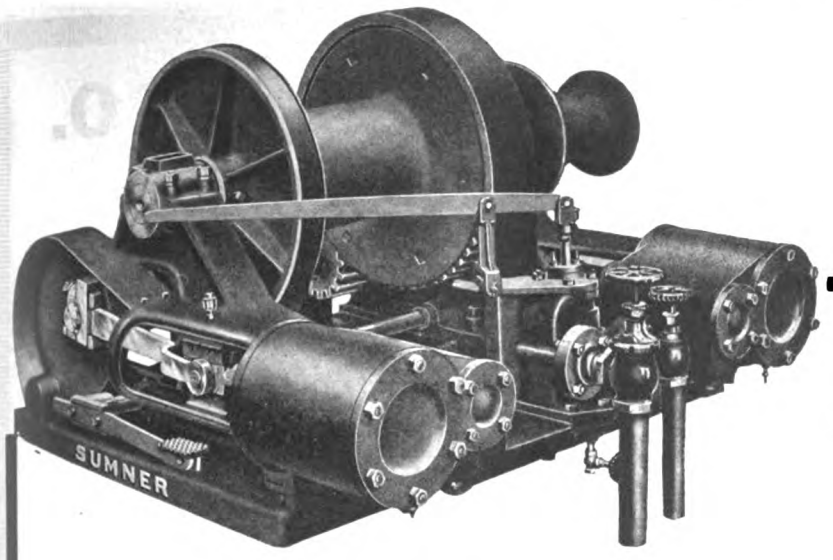

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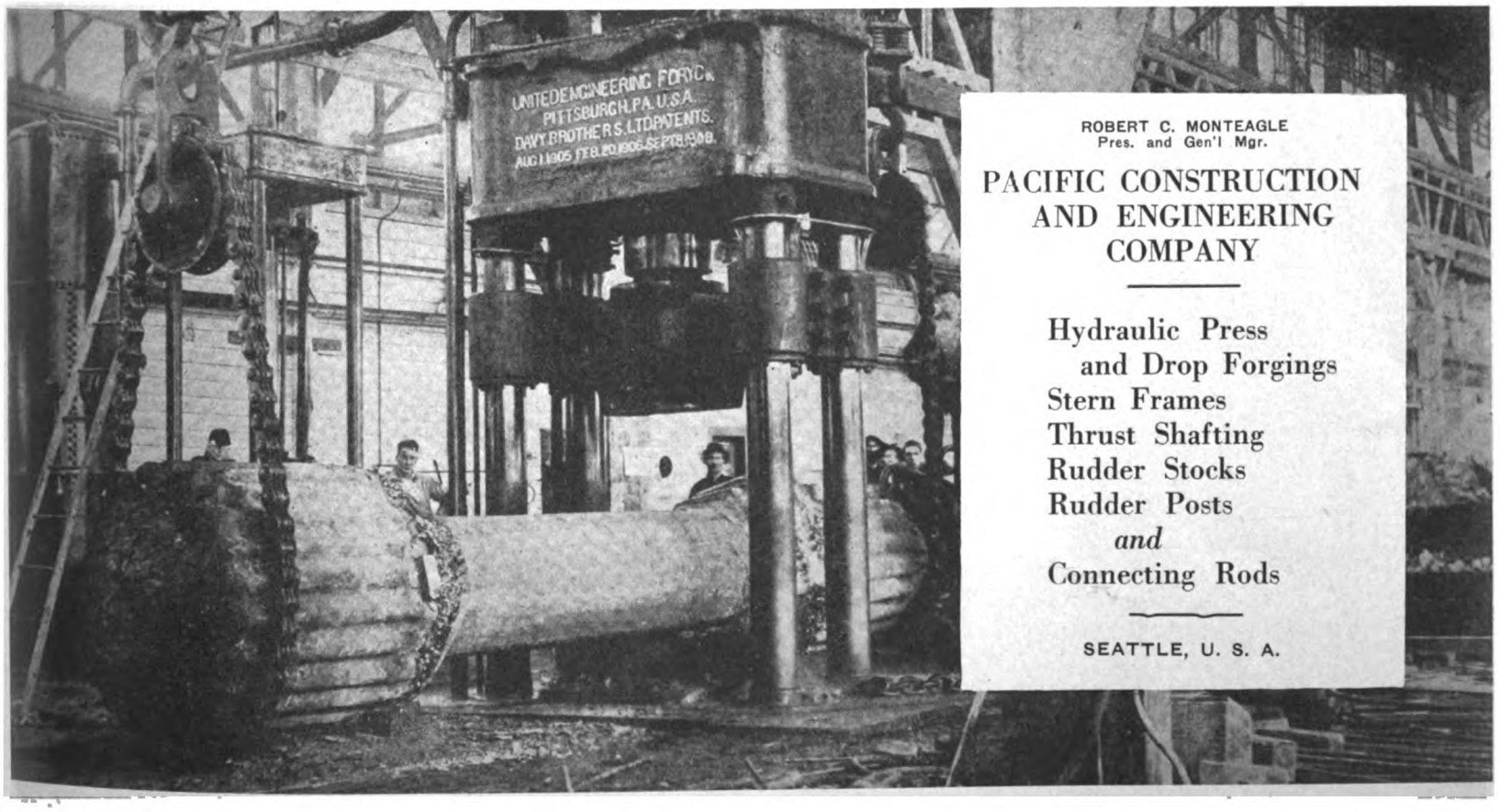

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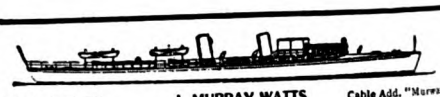

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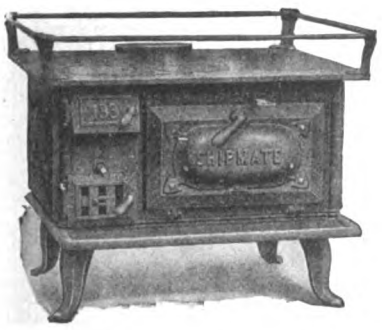

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SMALLEST SIZE—Body 18¾ Inches long : : : *LARGEST SIZE*—No limit to size

Bill Tarfin observes: "An old time deep-water mate would stand for no 'dumb insolence' from a sailor, but many of the old sea-cooks had to stand for a lot of 'dumb insolence' from their stoves. Th' nateral cussedness of sich chunks of iron 'ud have a cook tearin' his hair, but when th' SHIPMATE came along, thar' was sunshine an' chanteyin' in th' galley an' a smile like a Cheshire Cat on th' mugs o' th' for-ard gang."

Made by

THE STAMFORD FOUNDRY COMPANY

Established 1830 Stamford, Conn.

PACIFIC COAST AGENCIES

Oregon Marine & Fisheries Supply Company, 281 East Morrison Street, Portland, Ore.
Holbrook, Merrill & Stetson, Sixth, Bluxome and Townsend Streets, San Francisco, Cal.
Pacific Net & Twine Company, Pier 8, Seattle, Wash. Canadian Fairbanks-Morse Company, 798 Beatty Street, Vancouver, B. C.

Electric Motors

Largest and Most Complete Stock on Pacific Coast

Ship Yard Equipment

HOISTS, COMPRESSORS

AIR TOOLS

A. H. COX & COMPANY, Inc.

SEATTLE, WASH.

"Perfect Performance"

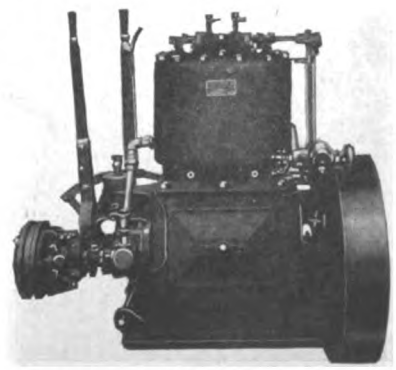
A Heavy-Duty Marine Engine

N & S

Make and Break Ignition
Valves Mechanically Operated
Force-Feed Oiling System
Equipped with N & S Reversible Propeller

Write for Catalog.

N & S ENGINE COMPANY
1144 Elliott Ave. N., SEATTLE, WASH.



2-cyl., 4-cycle, 16-20 h. p., 350 r. p. m.
Shipping weight 2,800 lbs.

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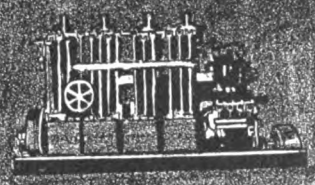


internal combustion engines

-run best when lubricated with

ARISTO

MARINE MOTOR OIL

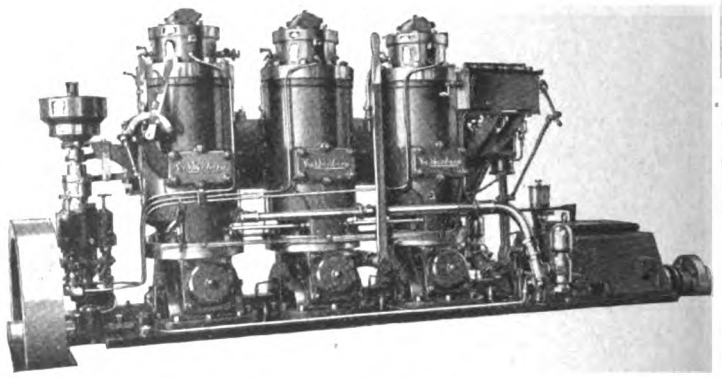
They deliver most power and run most economically when using the clean fuel

DIESOL

Supplied at main Pacific Ports by the UNION OIL COMPANY OF CALIFORNIA

Kahlenberg

MARINE OIL ENGINES
(HEAVY DUTY)



Positive Governor Control from No Load to Full Load.
Variable speed instantly obtainable from just "turning over" to wide open.
Operates on any of the crude fuel oils or kerosene.
Absolutely reliable. Fuel consumption .55 lbs. per H. P. hour.

Sizes 60 H. P. Upwards

KAHLENBERG standard engines in medium and heavy duty types are made in sizes from 2 to 54 H. P., and we would strongly recommend them for operating on KEROSENE, SOLAR OIL and GAS OIL. You ought to know more of the exclusive advantages the KAHLENBERG offers you.

Write for our literature stating your requirements fully.

KAHLENBERG BROS. CO.
MANUFACTURERS

1707 12th St. Two Rivers, Wis., U. S. A.

AN EPOCH-MAKING EVOLUTION

WEISS
MARINE OIL
ENGINES

WEISS ENGINE COMPANY
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NEW YORK CITY, U. S. A.

SHIPBUILDERS
FOR
IRON BARK
GUM
HEAVY OAK
LIGNUM VITAE

CONSULT
THE
EHRLICH-HARRISON COMPANY

HARDWOOD SPECIALISTS

RAILROAD AVE. AND CONNECTICUT ST.
SEATTLE, WASH.

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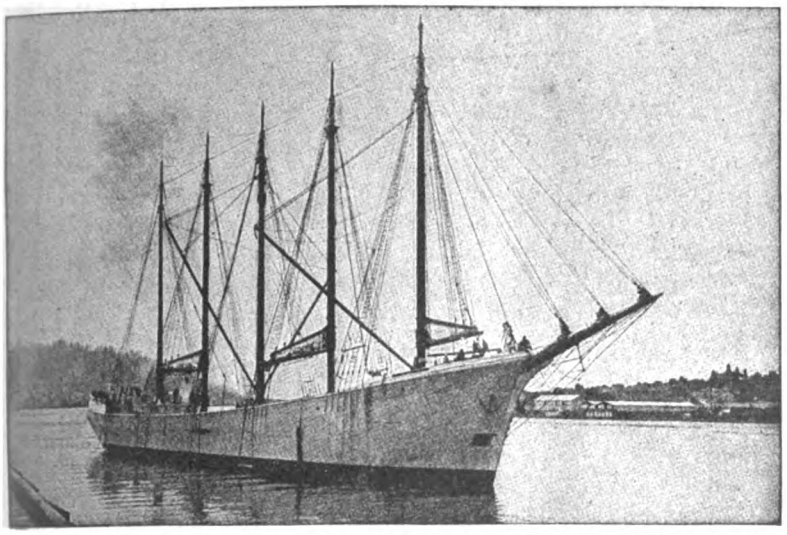
St. Helens Shipbuilding Co.

ST. HELENS, ORE.



M. S. "CITY OF PORTLAND"

HIGHEST CLASS WOODEN VESSELS
DESIGNED AND CONSTRUCTED

Chas. R. McCormick Co.

800 Fife Building SAN FRANCISCO

Peninsula Shipbuilding Company

Builders of

SHIPS FROM DOUGLAS FIR

ASSURING STRENGTH
AND BUOYANCY

PORTLAND, OREGON

SOCIETE ANONYME DES

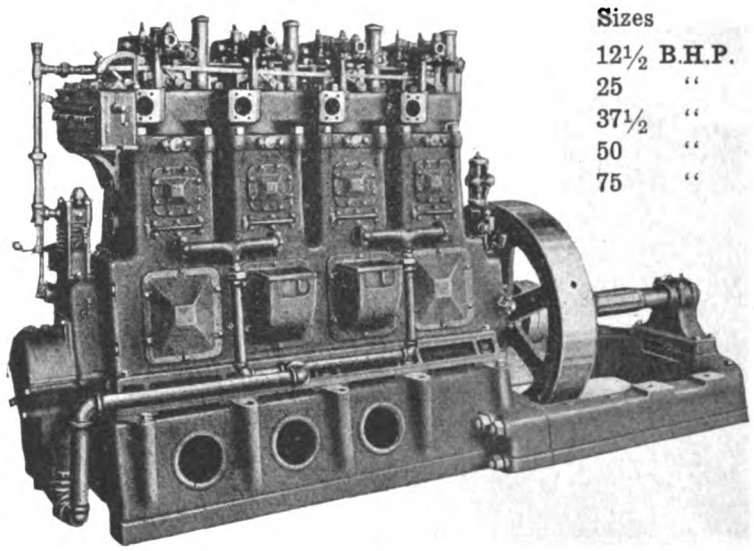
CHANTIERS ET ATELIERS

AUGUSTIN NORMAND

67 Rue du Perrey

LE HAVRE *(FRANCE)*

DIESEL ENGINES



Sizes
12½ B.H.P.
25 "
37½ "
50 "
75 "

BURNOIL ENGINES

The Best Power on the Cheapest Fuel

NO HOT BALL OR HOT SURFACE

Reduce your fuel costs by installing Burnoils, the perfected heavy oil engines. Burnoils use no trouble-making hot surfaces, carburetors or electrical devices. Tested and proven by years of severe service. Burnoils start easily and quickly—run steadily and economically. Stationary or marine types.

BURNOIL ENGINE CO.

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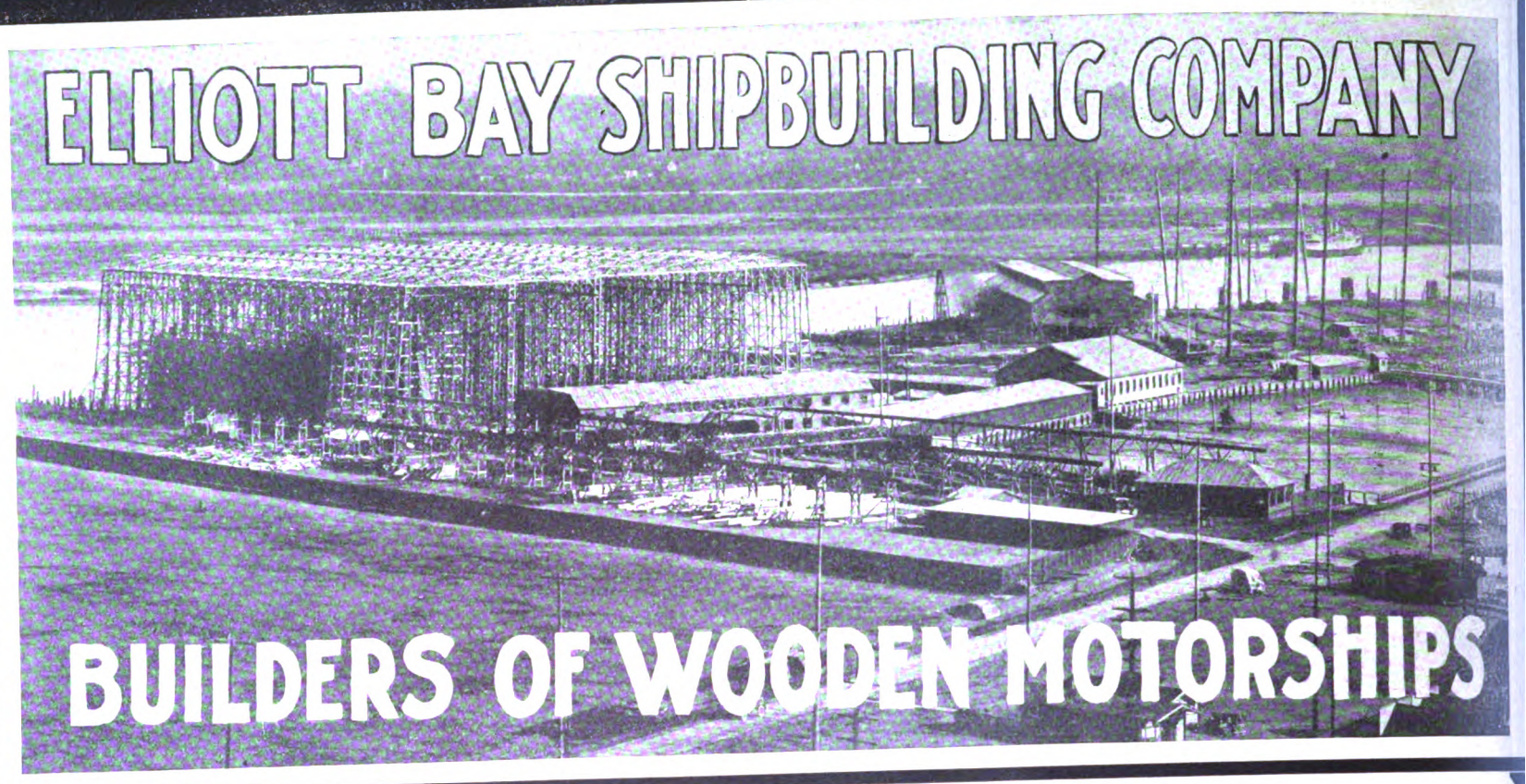

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With Every Appliance to Assist in

Speed and Good Workmanship

Five Full-Powered 3,500 Tons Wooden
Motorships Now in Course of Construction

Plant at Seattle, Wash.

C. O. Morrow, *Pres. & Gen. Manager*
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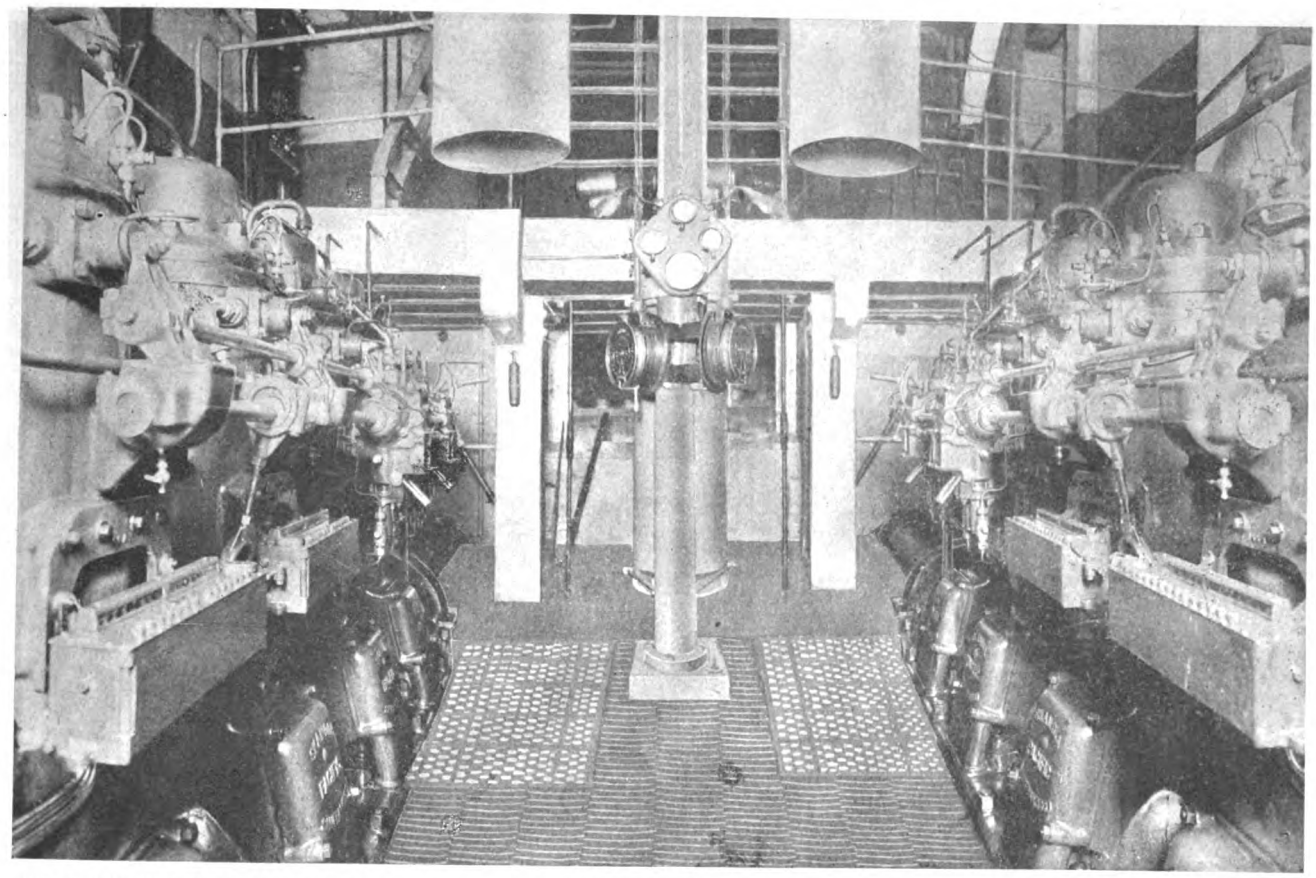
Skandia Oil Engines
Make
Compact Installations

MARINE



STATIONARY

ENGINE ROOM OF MOTOR AUXILIARY, SHOWING THE SPLENDID INSTALLATION THE TWIN 240 H. P. SKANDIA ENGINES MAKE IN THIS TYPE OF VESSEL

Operate on low gravity, crude or fuel oils

SKANDIA ENGINES
Are Made in Sizes From
5 to 500 B. H. P.

550,000 B.H.P. now in use and on order

Skandia Pacific Oil Engine Co.

Pacific Coast Builders of Werkspoor Diesel Engines

Factory: OAKLAND, CALIFORNIA

Northwestern Agents **SKANDIA ENGINEERING CO.**
101 Grand Trunk Dock, Seattle, Wash.

Eastern Agents **H. S. JOHANNSEN**
50 Church St., New York, N. Y.

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SHIP EQUIPMENT

For Builders and Operators

We Are Supplying Those
Extra High-Grade Brass

SHIPS LIGHTS

That the Shipping Board Specify

RUNNING LIGHTS
ANCHOR LIGHTS
BULKHEAD LIGHTS

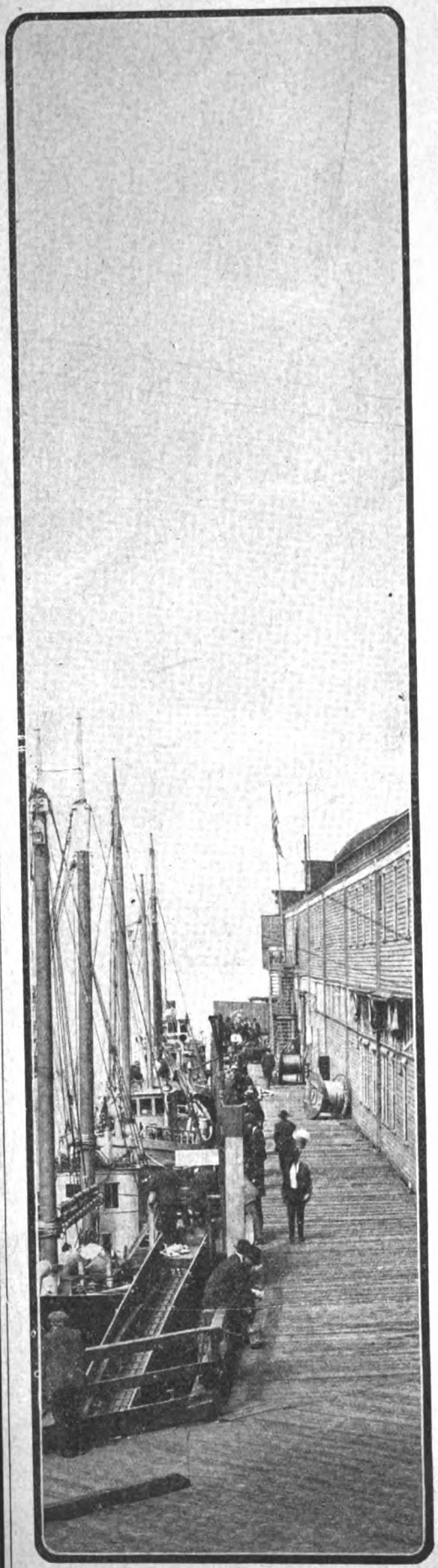
And No Ship Is "Class A" Without a

SHIPMATE RANGE

All Sizes For Every Purpose

PLYMOUTH CORDAGE ANCHOR CHAIN
BALDT AND PROVIDENCE ANCHORS
SANDS MARINE PLUMBING

In Fact Old Established Lines of Ship Chandlery That
You Can Depend Upon



MARINE ENGINES

FRISCO STANDARD—Heavy Duty
FRISBIE—Medium Duty
FERRO—Light Work

We Have an Engine for Every Service

Write for Catalog

Pacific Net & Twine Company

PIER 8, SEATTLE, U. S. A.

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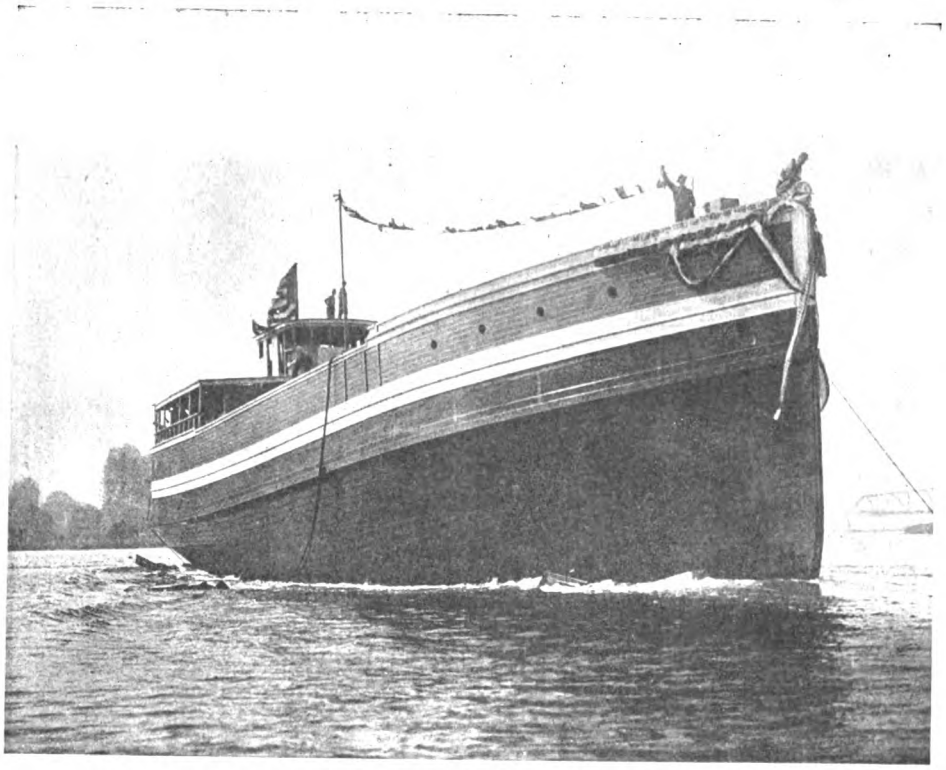
ATLAS FULL DIESEL TYPE ENGINE

SERVICE RELIABILITY POWER

ATLAS-IMPERIAL

DIESEL ENGINES BUILT

IN SIZES
From 110 to 1200 B. H. P.



DISTILLATE ENGINES BUILT

IN SIZES
From 4 to 250 B. H. P.

FREIGHTER "APEX" EQUIPPED WITH 350 H. P. ATLAS DIESEL

Mr. Lee H. Wakefield, the owner of the "Apex" is also the owner of seventeen boats installed with Atlas engines, two of these being Atlas Diesels. Mr. Wakefield selects the Atlas knowing that it is the best engine obtainable and that their service is unequaled.

AN ENGINE NOT AN *EXPERIMENT*

ATLAS-IMPERIAL GAS ENGINE CO.

MAIN OFFICE — OAKLAND, CALIFORNIA — FACTORY

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Aberdeen, Wash.—Gus. Lindberg.
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Sydney, Australia—Atlas Oil Engine Co. 15 Market St.
New Orleans, La.—J. G. Davis, 1324 Music St.
Mexico City—Wm. Young & Co., La Calle de Gante No. 11.
Papeete, Tahiti—Emile Levy.
Honolulu, T. H.—Cotton, Neill & Co.
Vancouver, B. C.—Ferrier and Lucas, 426 Howe St.

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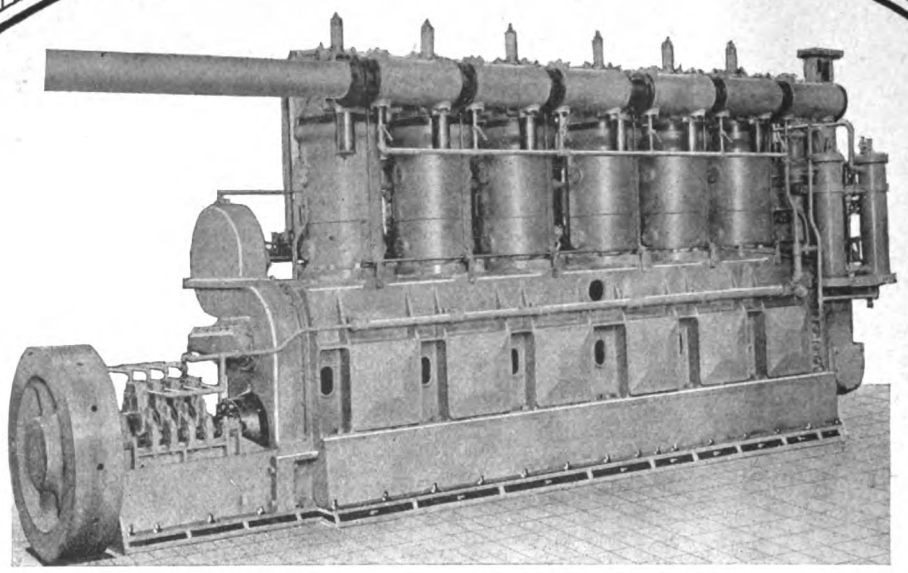

500 B. H. P. DIESEL TYPE RE VERSIBLE MARINE ENGINE

These MARINE ENGINES are the result of EIGHTEEN YEARS' Stationary and marine DIESEL ENGINE EXPERIENCE and THIRTY YEARS' EXPERIENCE in building the LARGEST and HIGHEST GRADE OF STEAM ENGINES.

These engines are built in the LARGEST and most COMPLETELY EQUIPPED PLANT in this country devoted EXCLUSIVELY to the building of Diesel Type Oil Engines.

SHIP OWNERS AND SHIPBUILDERS should avail themselves of these facilities.

SIZES AVAILABLE: 300, 500, 750, 1200 and 1350 B. H. P. per shaft.

ALL SIX-CYLINDER, ALL FOUR-CYCLE, and all directly REVERSIBLE MODELS.

MARINE DIESEL TYPE ENGINES STATIONARY

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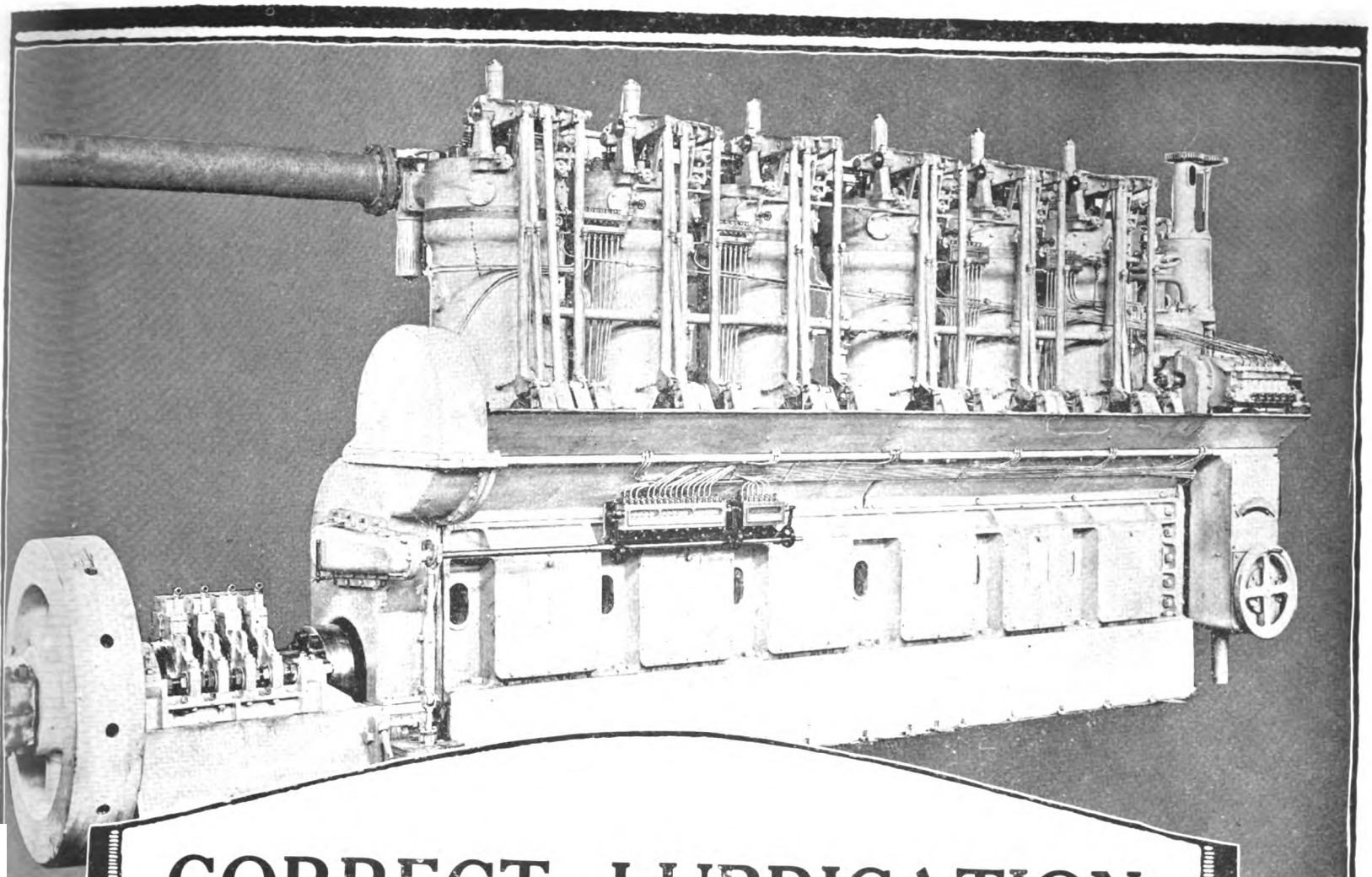

CORRECT LUBRICATION
FOR DIESEL and SEMI-DIESEL ENGINES

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surface Ignition, Semi-Diesel, or Diesel type—use

CALOL DIESEL ENGINE OIL
OR
CALOL DIESEL ENGINE OIL HEAVY

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service. At points named below and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

CORRECT FUEL FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil. Fuel Oil for the Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
For Diesel and Semi-Diesel Engines

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

RICHMOND, CALIF.
SEATTLE, WASH.
PORTLAND (WILLBRIDGE), ORE.
HONOLULU, T. H.
By barge at:
SEATTLE, WASH.
SAN FRANCISCO, CALIF.

STANDARD OIL COMPANY
(California)

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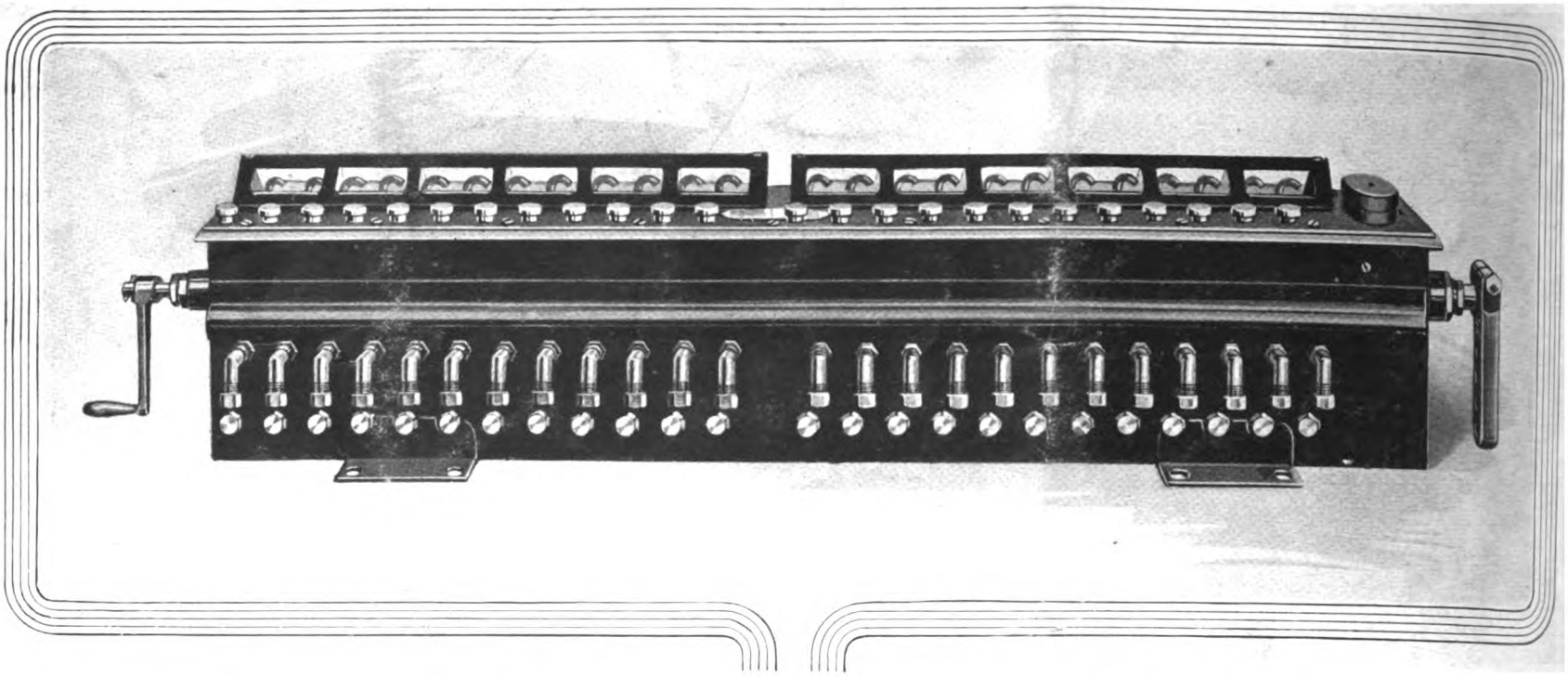

They are Superior in Three Ways

More and more marine motor builders are using Madison-Kipp Lubricators in preference to other kinds.

The development of motor-building makes plainer and plainer the Madison-Kipp superiority.

They are better in three outstanding things.

First, the Madison-Kipp is valveless; so it is free from the clogging, trouble and failures that check-valves always entail.

Second, the Madison-Kipp is so straight and clean in design that no parts protrude from the cover.

The plungers and the entire operating mechanism are immersed in the oil, so that they cannot be hampered and impeded by dirt.

Third, the Madison-Kipp feed adjustments are positive; the plunger stroke never varies and a full supply of oil is unfailingly drawn in.

The amount desired for delivery is then automatically measured out by the controlled registration of ports in the hollow plunger, sleeve, and barrel.

With the Madison-Kipp you are therefore protected against the failures and inaccuracies inseparable from feed adjustments made by regulating plunger strokes; for when those strokes are limited closely, accuracy and faithfulness become impossible.

With Madison-Kipp Lubricators you are always certain of just the amount of oil you want delivered.

And in addition they free you from all valve trouble and free you also from the menace of dirt-collecting protruding parts.

Madison-Kipp Lubricators are used not only on marine motors, but also on two of every three farm tractors in use, as well as steam hammers, dredges, and compressors.

We can make prompt deliveries, for our factory is the largest of any devoted to lubricator manufacture.

Write for our catalogs.

The Madison-Kipp Lubricator Co.
MADISON, WISCONSIN

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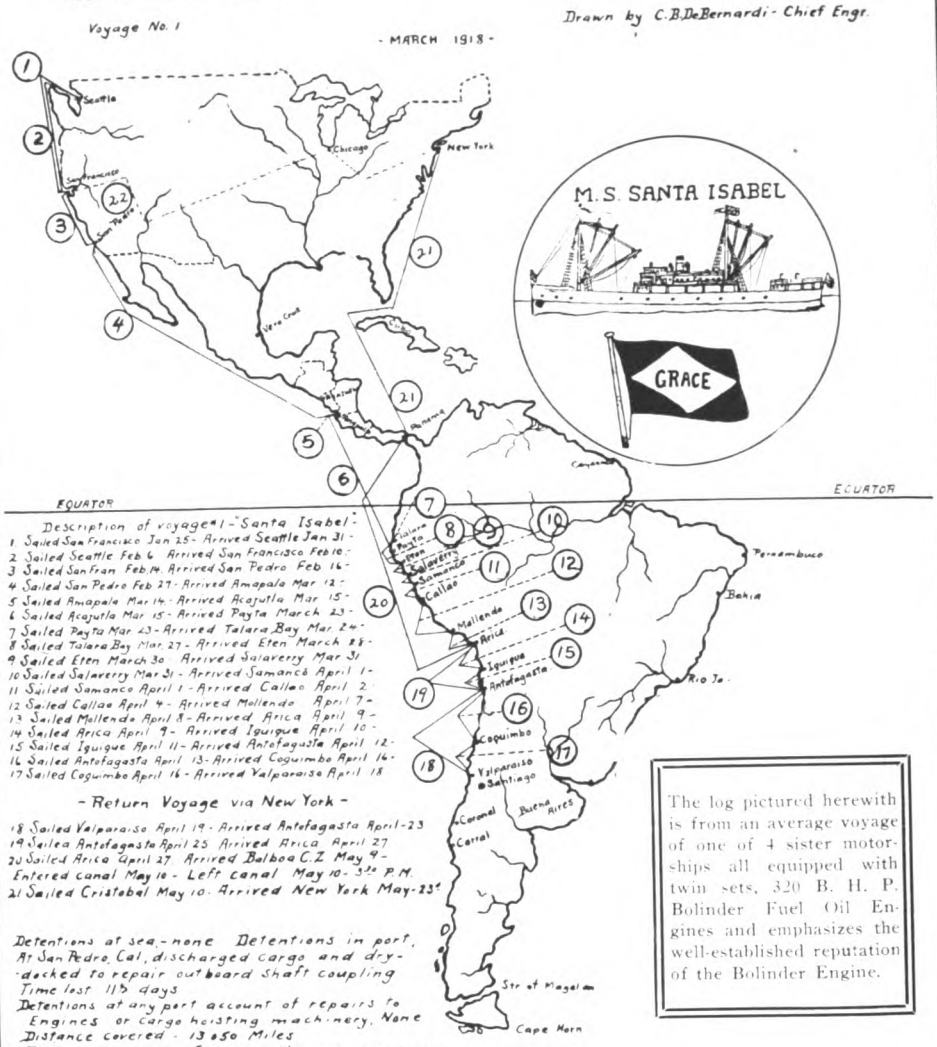
BOLINDER'S

550,000 B. H. P. of Bolinder's Engines Now in Use in All Parts of the World

Present Sales and Yearly Output 100,000 B.H.P.

M.S. SANTA ISABEL.

Drawn by C.B.DeBernardi - Chief Engr.



Description of voyage #1 - "Santa Isabel":
1. Sailed San Francisco Jan 25 - Arrived Seattle Jan 31 -
2. Sailed Seattle Feb 6 Arrived San Francisco Feb 10 -
3. Sailed San Fran Feb 14 Arrived San Pedro Feb 16 -
4. Sailed San Pedro Feb 27 - Arrived Amapala Mar 12 -
5. Sailed Amapala Mar 14 - Arrived Acajutla Mar 15 -
6. Sailed Acajutla Mar 15 - Arrived Payta March 23 -
7. Sailed Payta Mar 23 - Arrived Talara Bay Mar 24 -
8. Sailed Talara Bay Mar 27 - Arrived Eten March 28 -
9. Sailed Eten March 30 Arrived Salaverry Mar 31
10. Sailed Salaverry Mar 31 - Arrived Samanco April 1 -
11. Sailed Samanco April 1 - Arrived Callao April 2
12. Sailed Callao April 4 - Arrived Mollendo April 7 -
13. Sailed Mollendo April 8 - Arrived Arica April 9 -
14. Sailed Arica April 9 - Arrived Iquique April 10 -
15. Sailed Iquique April 11 - Arrived Antofagasta April 12 -
16. Sailed Antofagasta April 13 - Arrived Coquimbo April 14 -
17. Sailed Coquimbo April 16 - Arrived Valparaiso April 18

- Return Voyage via New York -

18. Sailed Valparaiso April 19 - Arrived Antofagasta April 23
19. Sailed Antofagasta April 25 Arrived Arica April 27
20. Sailed Arica April 27 Arrived Balboa C.Z. May 9 -
Entered canal May 10 - Left canal May 10 - 3.30 P.M.
21. Sailed Cristobal May 10 Arrived New York May 23

Detentions at sea - none Detentions in port, At San Pedro, Cal, discharged cargo and dry-docked to repair outboard shaft coupling Time lost 113 days
Detentions at any port account of repairs to Engines or Cargo hoisting machinery. None
Distance covered - 13,650 Miles
Time consumed Four months - or 120 days

C B DeBernardi
Chief Engineer

The log pictured herewith is from an average voyage of one of 4 sister motorships all equipped with twin sets, 320 B. H. P. Bolinder Fuel Oil Engines and emphasizes the well-established reputation of the Bolinder Engine.

ENGINED WITH TWIN SET OF 320 B. H. P. "BOLINDER" MARINE FUEL-OIL 8 ENGINES.

Present U. S. A. Bolinder Installations 55,000 B.H.P.

Craft under construction and to be fitted with "BOLINDER" Engines in the United States alone aggregate over 145,000 tons; "BOLINDER" Engines now in service, over 12,500

The BOLINDER

THE ENGINE THAT IS NOT A DIESEL
THE ENGINE THAT IS NOT A SEMI-DIESEL
THE ENGINE THAT IS THE BOLINDER
THE STANDARD FOR SURFACE-IGNITION FUEL OIL ENGINES

An example of the ruggedness of the "BOLINDER" Engine was displayed in the case of the M. S. "ASTRI" recently. This vessel encountered a hurricane off Mazatian and became severely strained, resulting in the flooding of the engine room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

HENRY LUND & CO., Marine Building San Francisco CALIFORNIA

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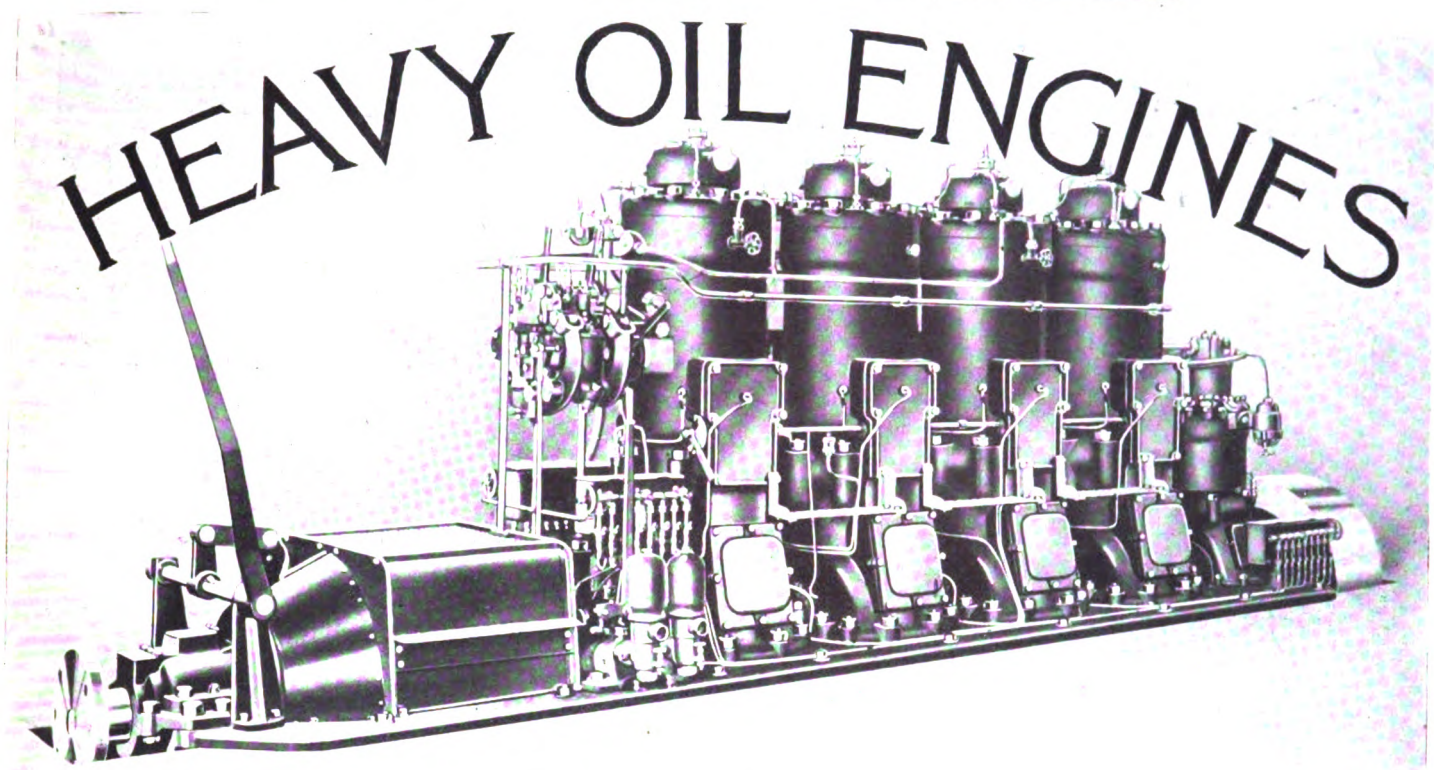
BOLINDER'S

HEAVY OIL ENGINES



A BOLINDER FOUR-CYLINDER DIRECT-REVERSIBLE MARINE ENGINE

ONE OF THE MARINE ENGINE ERECTING SHOPS AT THE BOLINDER WORKS

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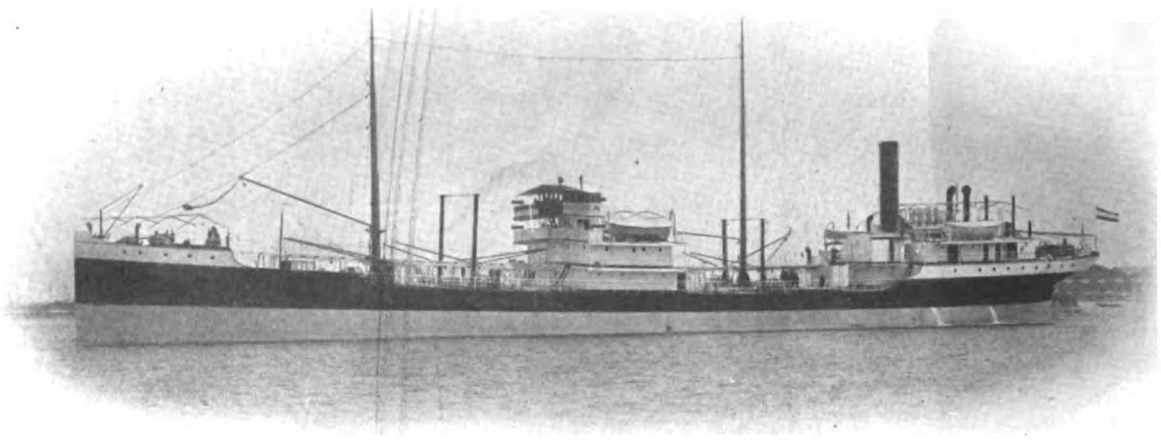
OIL FUEL

THE FUEL OF THE 20th CENTURY



ONE OF OUR FLEET OF OIL-CARRYING MOTORSHIPS

The Asiatic Petroleum Co., Ltd.

ST. HELEN'S COURT, GREAT ST. HELENS, LONDON, E. C., ENGLAND

are prepared to supply OIL FUEL at

Adelaide	Curacoa	Palembang	Port Said	Shanghai
Alexandria	Hong Kong	Panama Canal (both ends) (completed)	Puloe Samboe	Singapore
Balik Pappan	Karachi	Pangkalan Berandan	Rotterdam	Soerabaya
Bangkok	Lisbon (completed)	Penang	Sabang	Suez
Batavia	Madras	Portland, Oregon, S. S. A. (building)	Saitozaki	Sydney
Bombay	Melbourne		San Francisco	Tampico
Calcutta	Montreal		San Pedro	Tarakan
Cape Town	Nagasaki		Seattle, Washington, U. S.A. (building)	Thameshaven
Colombo				Vancouver (building)

Note.—During the war it is not possible to keep stocks at some of the above-named ports. It is therefore advisable for intending buyers to enquire whether stocks are available.

Buyers desiring information regarding supplies of and prices for **OIL FUEL** for use in Internal-combustion Engines or for other purposes should apply to **THE ASIATIC PETROLEUM COMPANY, LIMITED**, at the above address.

The Asiatic Petroleum Company also supply **KEROSENE OIL** for use in the smaller Internal-combustion Engines and are prepared to supply **PETROLEUM SPIRITS, LUBRICATING OILS, WAX** and **GREASES** in all far Eastern Markets.

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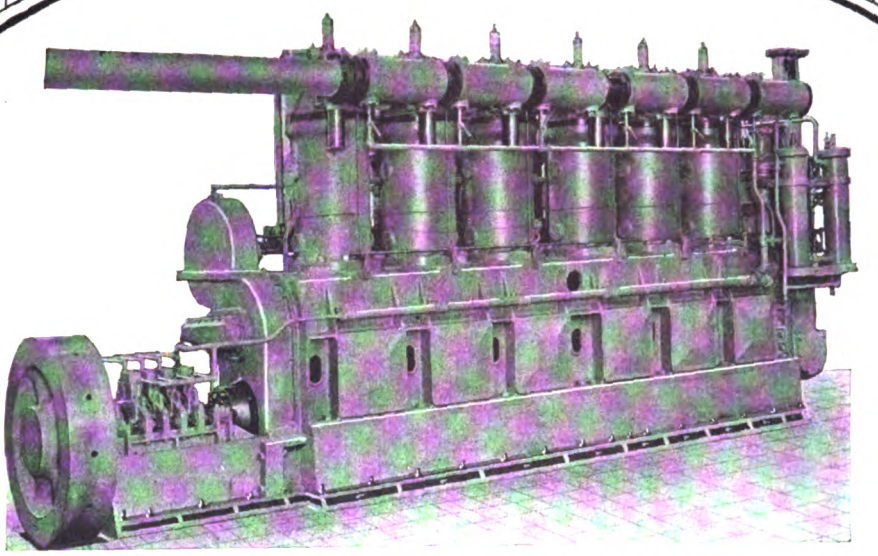

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These MARINE ENGINES are the result of EIGHTEEN YEARS' Stationary and marine DIESEL ENGINE EXPERIENCE and THIRTY YEARS' EXPERIENCE in building the LARGEST and HIGHEST GRADE OF STEAM ENGINES.

These engines are built in the LARGEST and most COMPLETELY EQUIPPED PLANT in this country devoted EXCLUSIVELY to the building of Diesel Type Oil Engines.

SHIP OWNERS AND SHIPBUILDERS should avail themselves of these facilities.

SIZES AVAILABLE: 300, 500, 750, 1200 and 1350 B. H. P. per shaft.

ALL SIX-CYLINDER, ALL FOUR-CYCLE, and all directly REVERSIBLE MODELS.

MARINE DIESEL TYPE ENGINES STATIONARY

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NLSECO HEAVY-OIL ENGINES

ANNOUNCEMENT

Owing to the capacity of our plant being completely occupied with the construction of Marine Diesel engines for the U. S. government, we regret we are unable to make any definite quotations to private interests during the remainder of this year. May we take your carte blanche order for delivery when conditions permit? Such deliveries will be made in strict rotation.

NEW LONDON SHIP and ENGINE CO.
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Bending Rolls
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Vertical and Horizontal Punches
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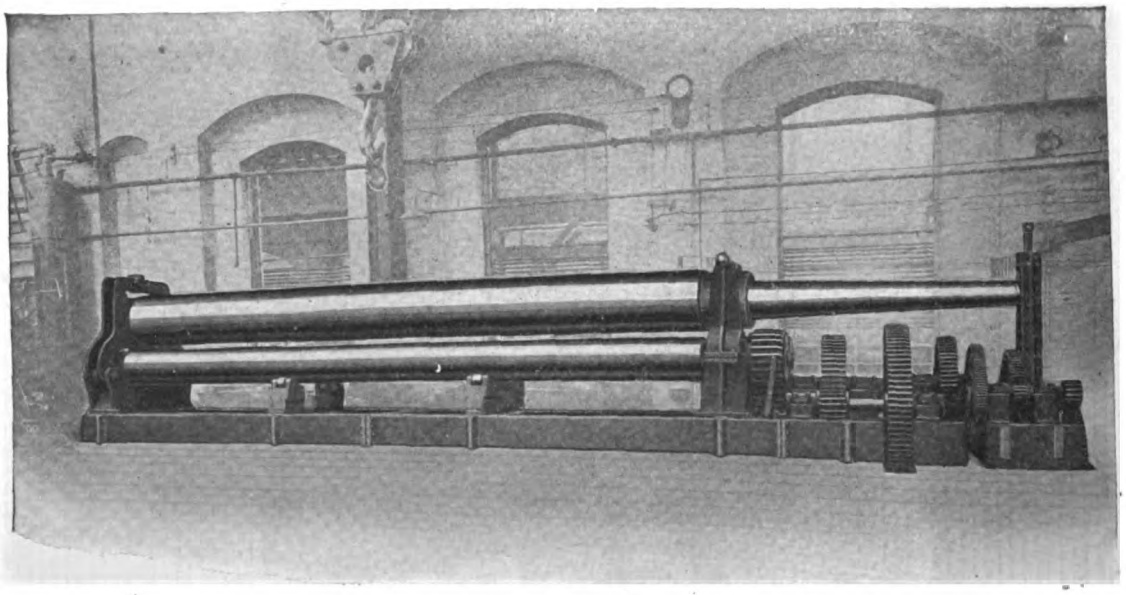

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Sectional Flangers
Riveters
Flanging Presses
Keel Plate Benders

HORIZONTAL BENDING ROLLS

SOUTHWARK FOUNDRY & MACHINE COMPANY
400 Washington Avenue, Philadelphia, Pa.

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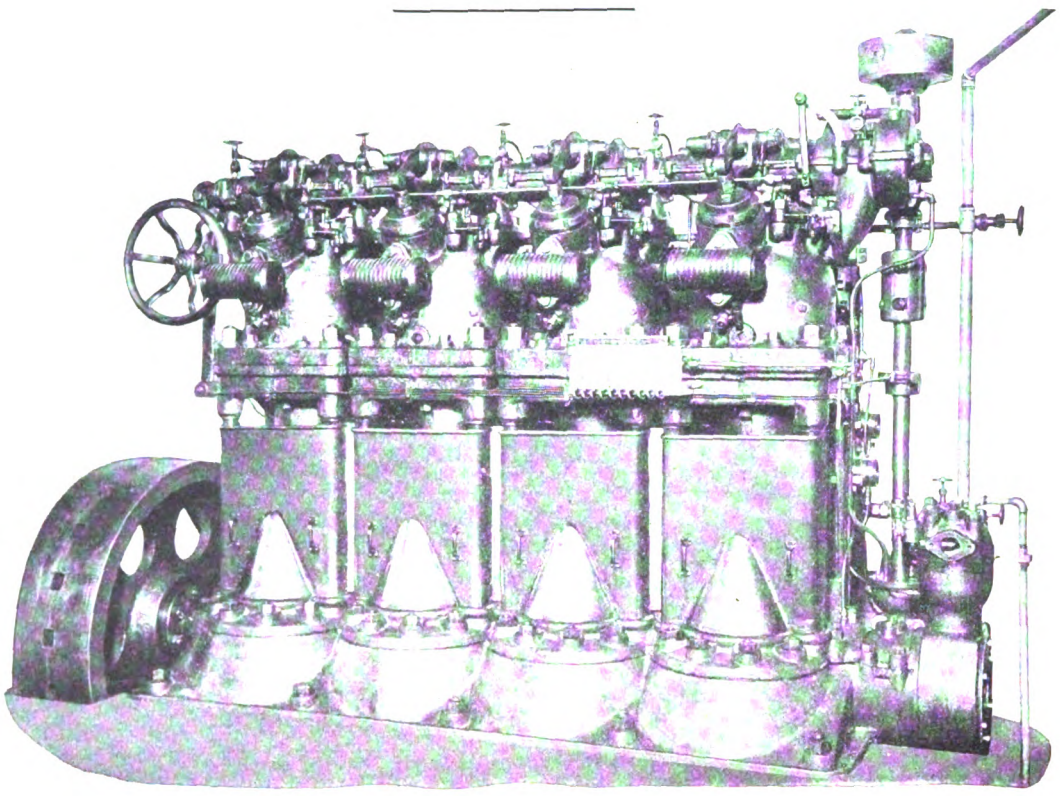
LYONS TYPE-VDV ATLAS

IDEAL POWER

For Small Commercial Craft and for
Marine Auxiliaries



100 BHP Lyons-Atlas Heavy-Oil Engine, Type VDV

Lyons Atlas Company

Established 1870

INDIANAPOLIS, IND., U. S. A.

Ignition Solely by the Heat of Compression, without Air-injection, Magneto, Spark-Plug, Electric-System, Hot-Bulb, Tube, Ball, Plate, or other Heated Metallic Surface

No Carburetor or High Pressure
Air Compressor

MARINE HEAVY OIL ENGINES

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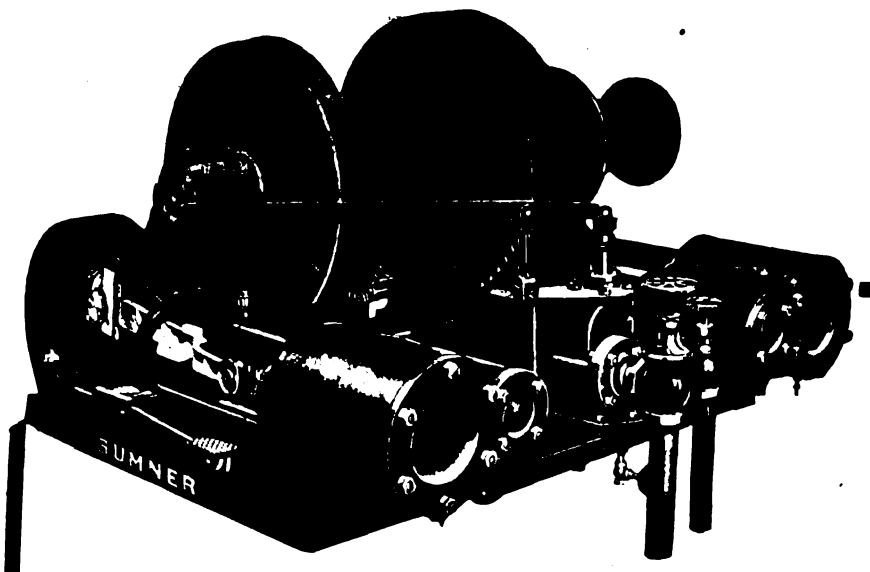

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Write us for Complete Description with Weights and Prices

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EVERETT, WASH., U. S. A.

Sumner Steam Cargo Hoist

A New Model

CYLINDERS—8"x10"; steam pipe 2"; exhaust pipe 2½"; self-draining piston valves.

MANIFOLD FOR STEAM AND EXHAUST—Is lowest part of cylinders and valves, thereby draining all condensation from exhaust.

WITH BALANCED THROTTLE VALVE—Securely bolted. Lever in any position desired.

MAIN SHAFT—Forged Steel, 4 3/16" in diameter.

EXTENDED BOX—With 13" bearing, supporting main shaft the entire distance between main gear and gypsy head.

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IMMEDIATE START
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1500
and
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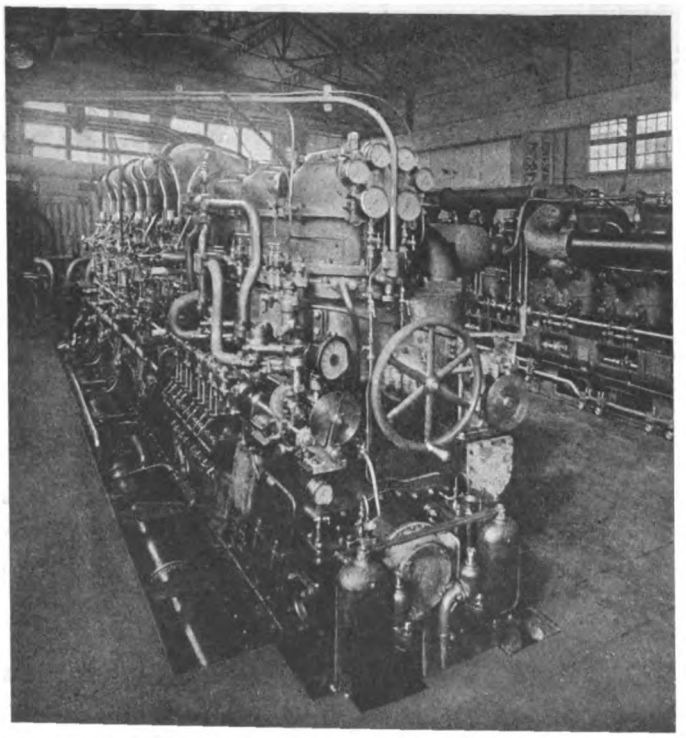
H. P.

For ONE Motor
(Submarine Type)



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LIGHT WEIGHT
(Only 46 lbs. per B. H. P.)

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EFFICIENCY
(0.400 lb. of Fuel Oil per B. H. P.)

Two and Four Cycle DIESEL ENGINES

For War and Merchant Ships

SCHNEIDER & CIE

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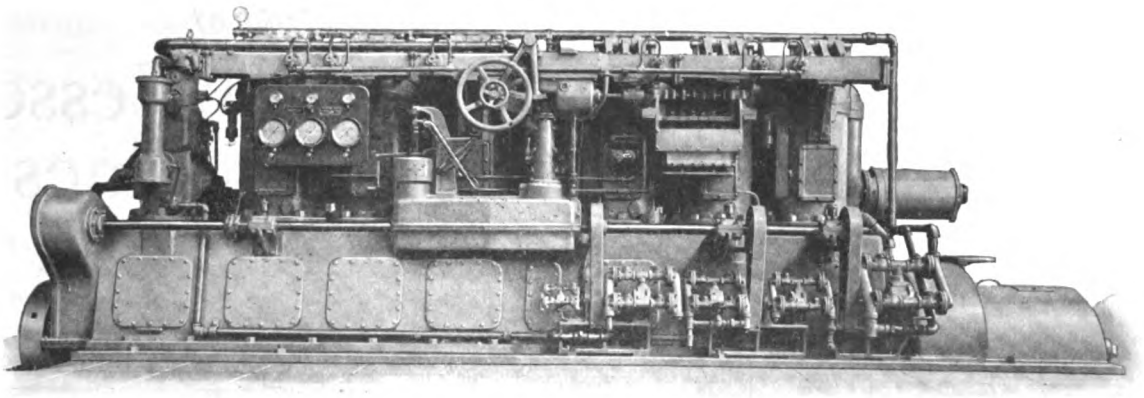
WINTON
DIESEL OIL ENGINES *for* MARINE SERVICE



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¶ Simple in operation, consequently easy to obtain competent engineers

¶ Rugged in its construction and Reliable in its operation

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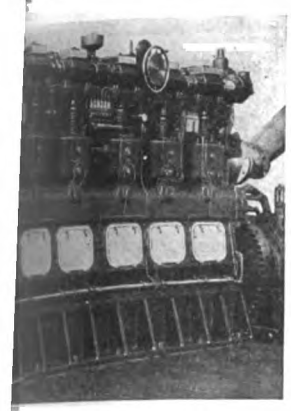

ED MOTOR, 1350 B. H. P.

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22 MILLIONS OF LIRE (Fully Paid)

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(LIMITED)

Ex Fiat-San-Giorgio

Shipyard, Muggiano (Spezia)
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(Type Fiat-San Giorgio)

such as were supplied to the Navies of

Brazil, Denmark, Great Britian, Italy, Portugal, Spain, Russia, Japan, United States and Sweden, and Germany (before the war)

Complete Construction of War and Merchant Ships. Cargo and Passenger Vessels of any Capacity. Ships equipped and repaired.

Heavy-Oil Marine Motors, type Fiat-San Giorgio, for War and Merchant Ships of any capacity.

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The Spezia Shipyard every year will launch not less than 18 standardized Diesel Motorships of 8,100 to 10,000 tons D. W. capacity each, with complete equipment and machinery built by the FIAT-SAN GIORGIO exclusively, while the output of submarines and torpedo-boats will remain undiminished.

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SHARE CAPITAL
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Societa Anonima Italiana

GIO. ANSALDO & CO.

Registered Office, Rome
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THE GIO. ANSALDO & C. WORKS, founded by the PRIME MINISTER CAVOUR in 1853 under the Direction of the distinguished engineer, GIOVANNI ANSALDO, had, especially under the subsequent Management and Direction of the Bombrini Brothers, a prosperous career, during which the manufacture was extended from early Locomotives to Marine Engines and to Shipbuilding and other Naval Work. The greatest impulse, however, was given by the late Comm. Ferdinando Maria Perrone in 1904, when the Firm was transformed into the present LIMITED SOCIETY to attain wider scope, which has now been fully realized by his Sons. The original WORKS OF SAMPIERDARENA and the SHIPYARD OF SESTRI PONENTE have recently been greatly enlarged and augmented by other ESTABLISHMENTS and associated CONCERNS, devoted not only to mercantile and Naval Shipbuilding in all its branches, but also to armour plate, guns, and war material of all kinds.

The SOCIETY has at present at work, in its own 28 ESTABLISHMENTS and other associated CONCERNS as hereunder enumerated, about 50,000 hands, men and women, and is capable of building and is building:—

1st—Warships and mercantile vessels of all kinds and sizes from big Super-dreadnoughts and ocean liners to destroyers, torpedo boats, submarines, cargo steamers, tug boats, motor boats, etc.
2nd—Diesel marine oil engines up to 2,000 b. h. p., also marine steam propelling engines, both reciprocating and turbine engines with and without gearing.
3rd—Steam boilers, both water-tube and cylindrical, of all types and sizes.
4th—Locomotives and tenders complete, and Machine Tools.
5th—Armour plates, guns, armoured turrets complete, ammunition complete, metallic cartridges and casings.
6th—Auxiliaries for propelling machinery, and all kinds of auxiliary machinery for ships, such as steering gears, capstans, winches, distilling condensers, and screw propellers.
7th—Dynamos and all electric appliances, auxiliary electric machinery both for ship and land service, electric gear for turrets and guns, elevators, steering gears, electric capstans and winches, cranes and electric propelling machinery.
8th—Aeroplanes and their motors.
9th—Steel, cast iron and bronze castings of all varieties and sizes.
10th—Steel forgings of all kinds and sizes, special steels, and Files.
11th—Boiler steel tubes, steel, iron, copper and brass pipes.
12th—Furniture of all descriptions, both wood and metallic, for warships, liners and mercantile vessels.

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2.—Locomotive Construction Works.....SAMPIERDARENA
3.—Artillery and Big Gun Works.....SAMPIERDARENA
4.—War Munition Works.....SAMPIERDARENA
5.—Aeroplane Motor Works, San Martino.....SAMPIERDARENA
6.—Cast Steel Foundry.....CORNIGLIANO LIGURE
7.—Armour Plates and Forging Plant.....CORNIGLIANO LIGURE
8.—Oxygen and Hydrogen Production Plant.....CORNIGLIANO LIGURE
9.—New Artillery and Big Gun Works.....CORNIGLIANO LIGURE
10.—Electric Products Plant.....CORNIGLIANO LIGURE
11.—Bronze Foundry.....CORNIGLIANO LIGURE
12.—Delta Metal and Alloys Foundry.....CORNIGLIANO LIGURE
13.—Brass Cartridge Works.....CORNIGLIANO LIGURE
14.—Internal-Combustion Engine Works.....CORNIGLIANO LIGURE
15.—Aeroplane Works No. 1 (Marine Hangars).....BORZOLI (Mare)
16.—Aeroplane Works No. 2.....BOLZANETO
17.—Aeroplane Works No. 3.....TORINO (Corso Peschiera 251)
18.—Tube Mills.....FEGINO (Val Polcevera)
19.—Projectile-Case Works.....FEGINO
20.—Naval Shipyard.....SESTRI PONENTE
21.—Saw Mill and Boat Yards.....VOLTRI
22.—Ammunition Works.....SESTRI PONENTE
23.—Cast Iron Foundry.....PEGLI
24.—Fire Brick Plant.....STAZZANO (Serravalle Scrivia)
25.—Genoa Shipyards.....MOLOGIANO (Porto di Genova)
26.—Iron Mines.....COGNE (Valle d'Aosta)
27.—Electric Furnaces for Steel and Pig Iron and Rolling Mill..AOSTA
28.—Special Alloys Plant.....AOSTA

Associated Concerns

1.—Shipyard and Works, Savoia.....CORNIGLIANO LIGURE
2.—Shipyard and Works, Fiat San Giorgio.....SPEZIA
3.—Internal-combustion Engine Works, Fiat San GiogioTORINO
4.—Ore Mines.....COGNE (Val d'Aosta).
5.—Italian National S.S. Company.....GENOVA
6.—Lignite Mines.....GROSSETO (Tuscany).
7.—Cerpelli's Centrifugal and Turbine Pump Works..LA SPEZIA
8.—Westinghouse Company.....VADO LIGURY
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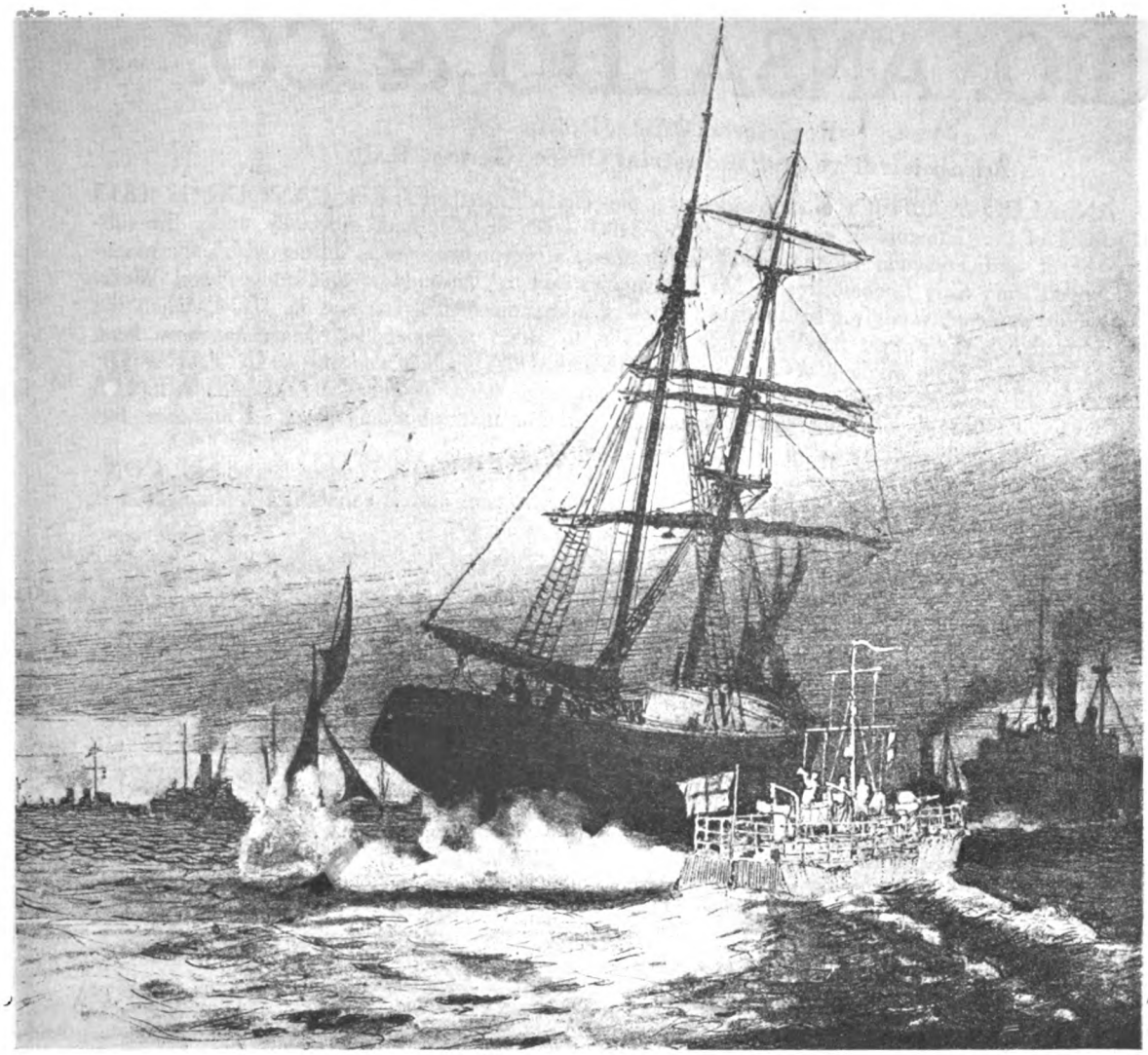

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"THE KING'S HIGHWAY—A PATROL-BOAT ON DUTY IN THE BUSY WATERS OF THE NORTH SEA"—*The Graphic*

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The British, French, Italian and U. S. A., mosquito craft are respected by every merchantman making Allied ports today.

THE STANDARD ENGINE

keeps these boats to sea, gives them their staying qualities, their cruising range, their speed. We shall be glad to send data.

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OUT OF THE MOUTH OF HELL: Motor launches dashing away with the survivors. At Ostend as the Vindictive was sinking the crew jumped into two motor-boats, 254 and 276, which had gallantly stood by to rescue the men. One of the motor-boats, with two officers and thirty-eight men, was sighted by Admiral Keyes' flagship, Warwick, which took the party on board. Motor-launch 276 brought off Lieutenant Sir John Alleyne and two ratings. Two other motor-launches, 283 and 128, were also detailed for rescue work, and searched the shores carefully under heavy fire.—*The Graphic.*

What a *glorious* duty, the driving of these "M. L's." "Out of the Mouth of Hell" with the heroes who survived; a duty entrusted to

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Horse Power

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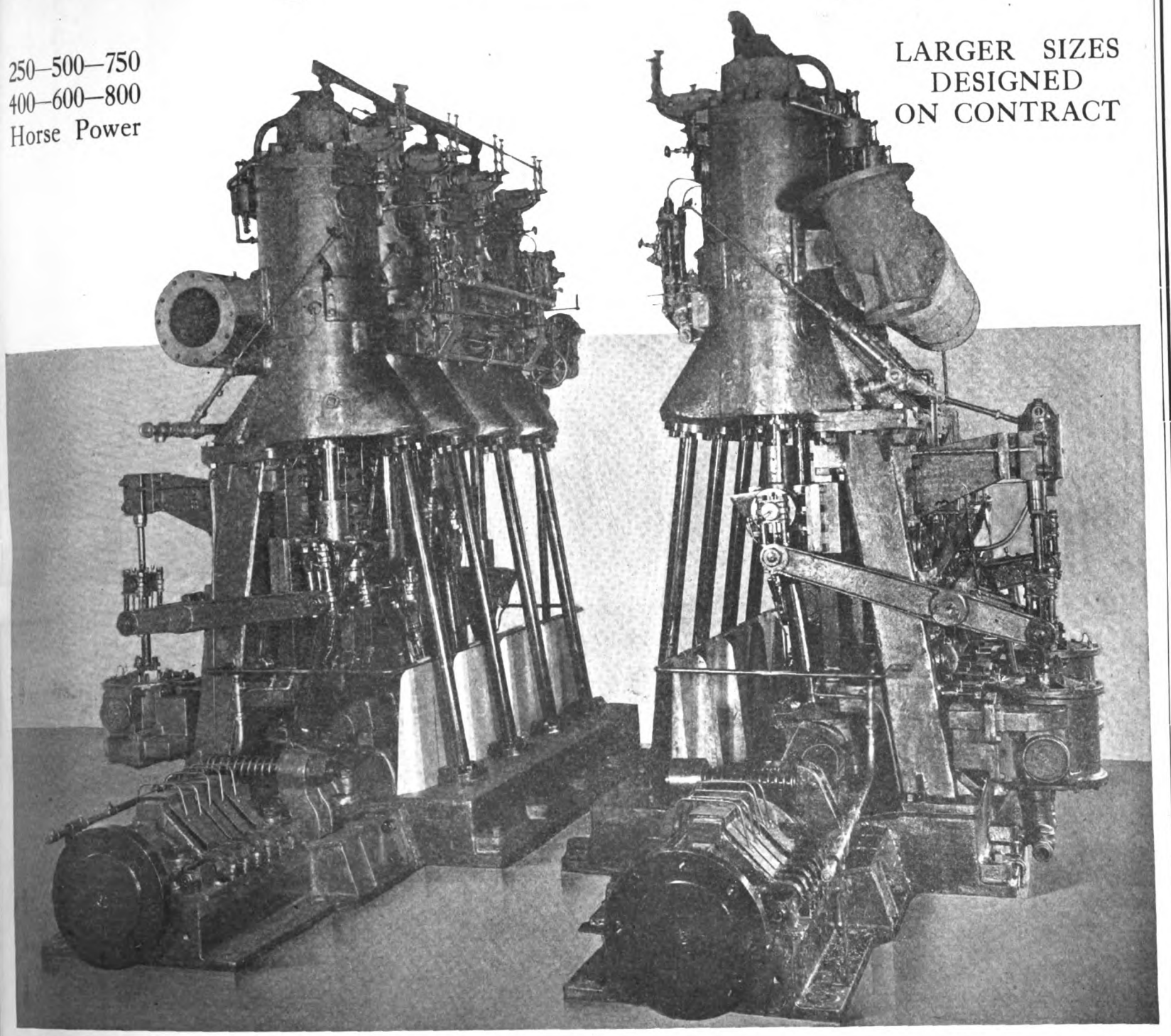

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DIRECT REVERSIBLE
4, 6 and 8 CYLINDERS

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Seattle, U.S.A.

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S. S. "CALIFORNIAN"—8,000 tons
S. S. "DAKOTAN"—10,000 tons
S. S. "FLORIDAN"—10,000 tons
S. S. "HAWAIIAN"—8,000 tons
S. S. "IOWAN"—10,000 tons
S. S. "KANSAN"—12,000 tons, twin screw
S. S. "KENTUCKIAN"—10,000 tons
S. S. "MEXICAN"—12,000 tons, twin screw
S. S. "MINNESOTAN"—10,000 tons
S. S. "MONTANAN"—10,000 tons
S. S. "OHIOAN"—10,000 tons
S. S. "OREGONIAN"—8,000 tons
S. S. "PANAMAN"—10,000 tons
S. S. "PENNSYLVANIAN"—10,000 tons
S. S. "TEXAN"—12,000 tons, twin screw
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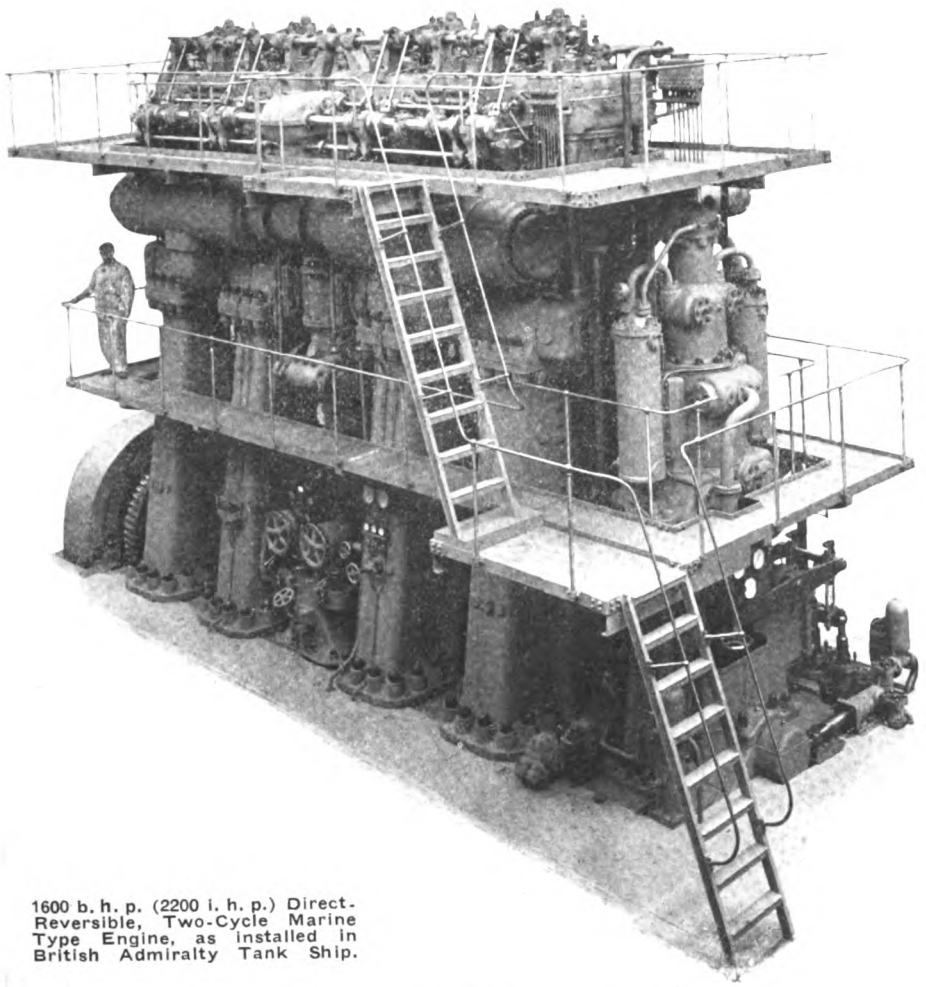
SULZER TWO-CYCLE DIESEL
MERCHANT MARINE and SUBMARINE ENGINES

STANDARDIZED SIZES:
150 b. h. p. to 4,000 b. h. p. per engine
in four and six-cylinder units



1600 b. h. p. (2200 i. h. p.) Direct-Reversible, Two-Cycle Marine Type Engine, as installed in British Admiralty Tank Ship.

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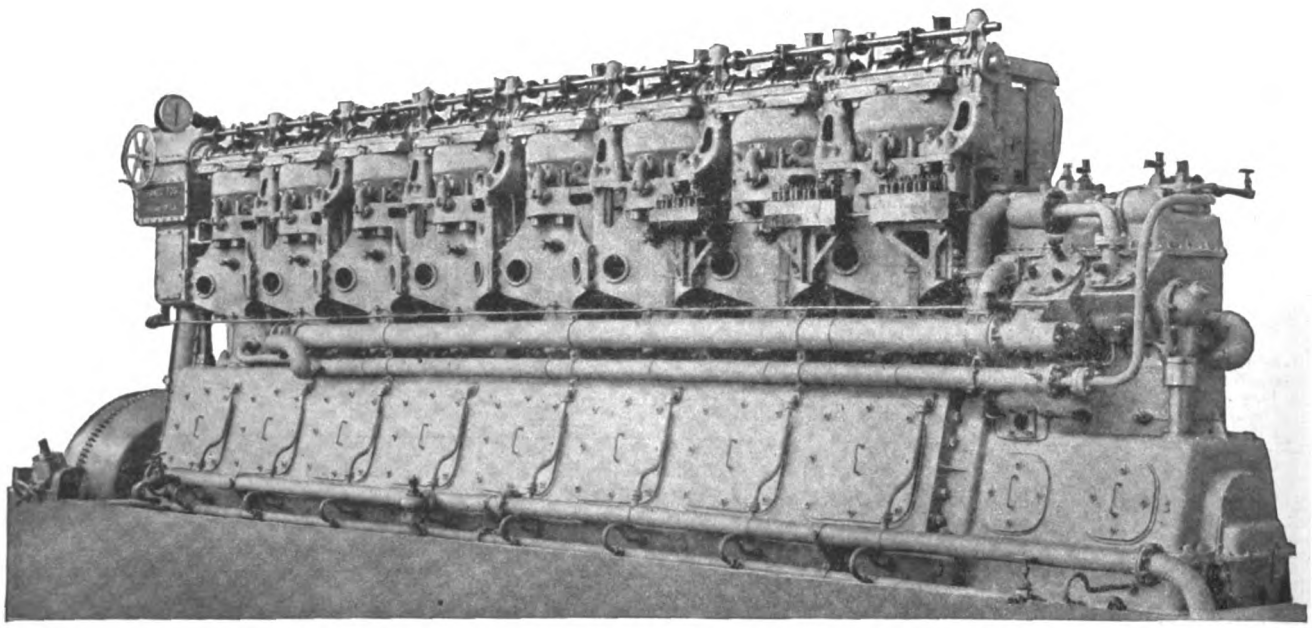

THE TOSI FOUR-CYCLE TYPE 1500 B.H.P. SUBMARINE DIESEL ENGINE

HIGH-SPEED DIESEL ENGINES FOR FAST NAVAL SURFACE-CRAFTS, AND SUBMARINES.

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Owing to the confusion we find in the minds of many engineers as to the fundamental characteristics of the cycle of operations of Burnoil Engines we wish to state, that—

Burnoil Engines are strictly high-compression oil-engines and enjoy all the advantages of that cycle. They are built under the Hvid and Brons patents, which cover a cycle distinct from that of any other engine.

Over 100,000 H. P. in engines of this cycle have been sold in U. S. A. and Europe

The Burnoil Engine is not a "Diesel"; "Semi-Diesel"; nor a "Gas Engine"; but is a "Hvid-engine" if a distinctive name is necessary.

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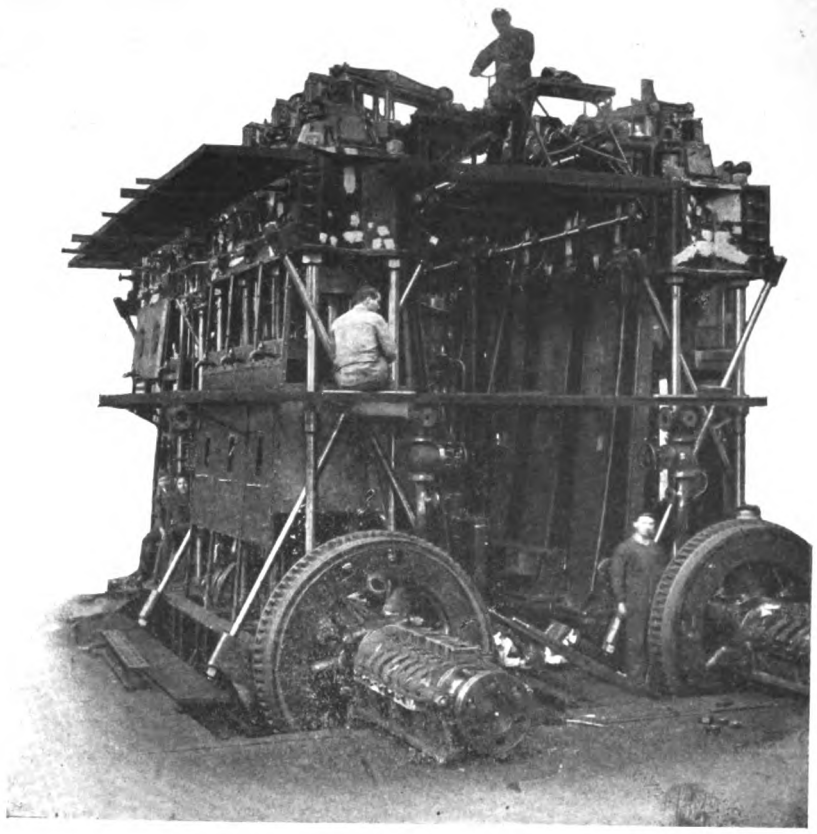

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Under Construction

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Licensed Builders of

WERK-SPOOR

Marine Diesel Engines

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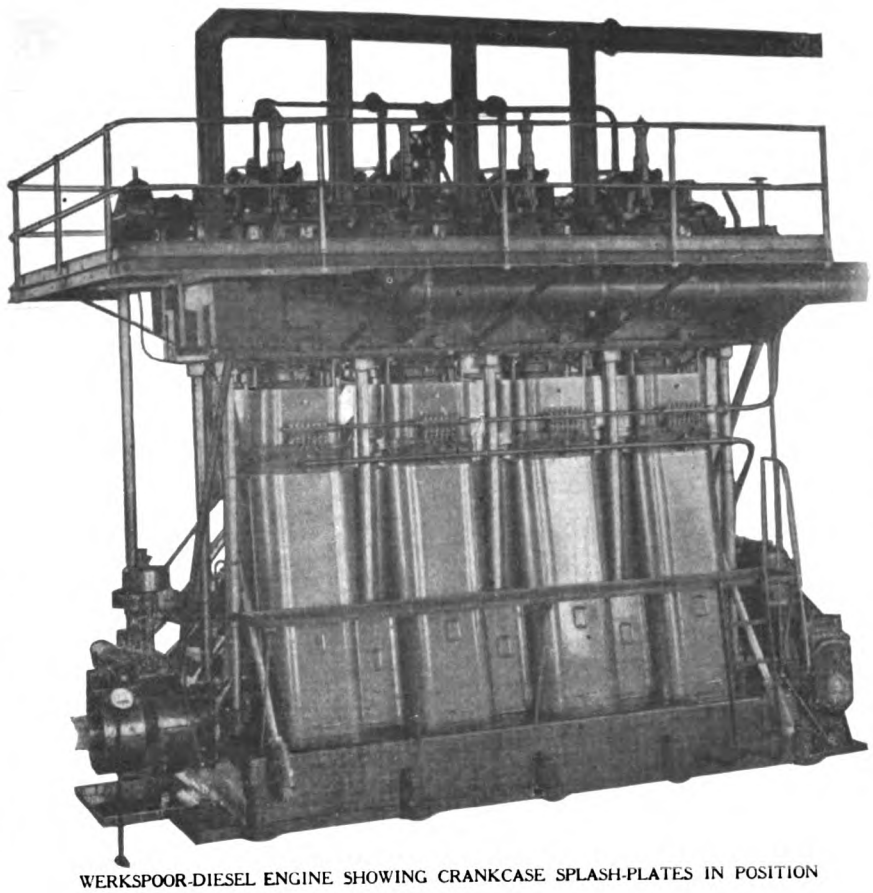
AMSTERDAM WERKSPOOR HOLLAND



WERKSPOOR-DIESEL ENGINE SHOWING CRANKCASE SPLASH-PLATES IN POSITION

True Value of Accessibility and Its Relation to Reliability

Given a well-designed and properly constructed Diesel marine-engine, its steady and continuous operation rests entirely with the ship's-engineers in charge.

And, in order to ensure that the engineers will take interest in their duties, the engine-builder must produce a design that reduces the work of the operators to a minimum: also a design which conforms to machinery to which steam-engineers are accustomed.

An engine which gives hard work to attend and overhaul will be indifferently handled by the average ship's-engineers, and their reports to the owner will be unfavorable.

These two illustrations demonstrate the remarkable accessibility of the Werkspoor-Diesel engine. For rapid adjustment and overhaul no other Diesel engine can compare with it.

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Skandia-Pacific Oil Engine Co. San Francisco, California

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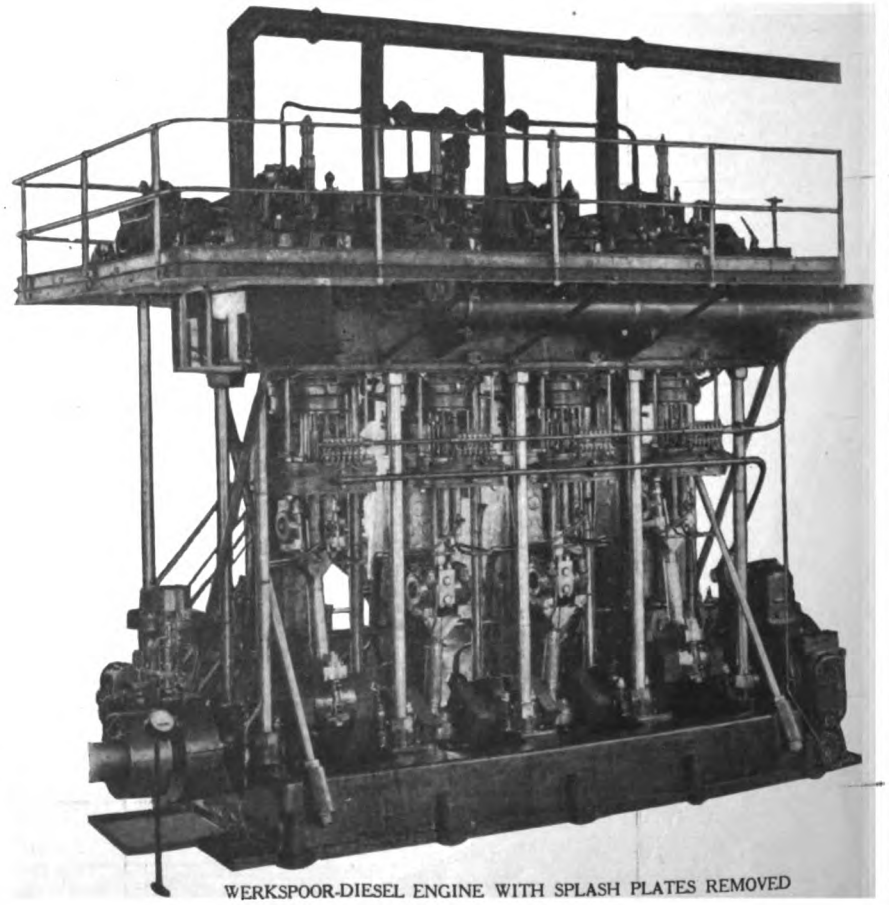

WERKSPOOR-DIESEL ENGINE WITH SPLASH PLATES REMOVED

DIESEL MARINE TYPE ENGINES

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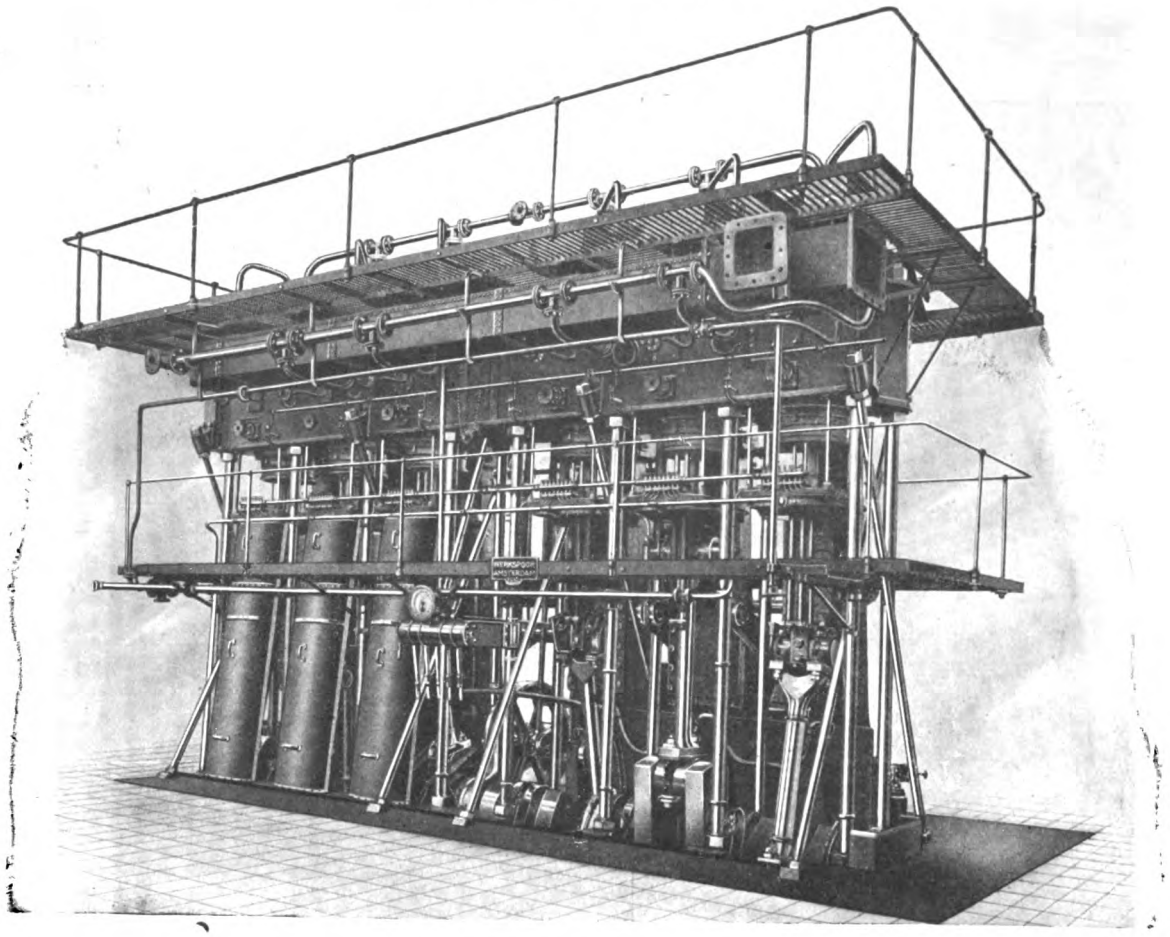
SAN FRANCISCO, CAL. OAKLAND, CAL.

BUILDERS UNDER LICENSE
of the

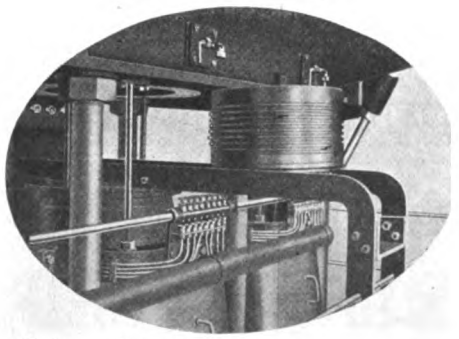
WERKSPOOR

DIESEL MARINE ENGINE



ECONOMY

RELIABILITY



ACCESSIBILITY

Werkspoor Piston Dismounting Arrangement which greatly reduces engine-room labor when cleaning or overhauling

Northwestern Agents
SKANDIA ENGINEERING CO.
101 Grand Trunk Dock
Seattle, Washington

SKANDIA-PACIFIC OIL ENGINE CO.
Balboa Building, San Francisco, Cal.
Factory: Oakland, Cal.

Eastern Agents
H. S. JOHANNSEN
50 Church Street
New York, N. Y.

DIESEL WERKSPOOR MARINE ENGINES

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Skandia Oil Engines
Make
Compact Installations

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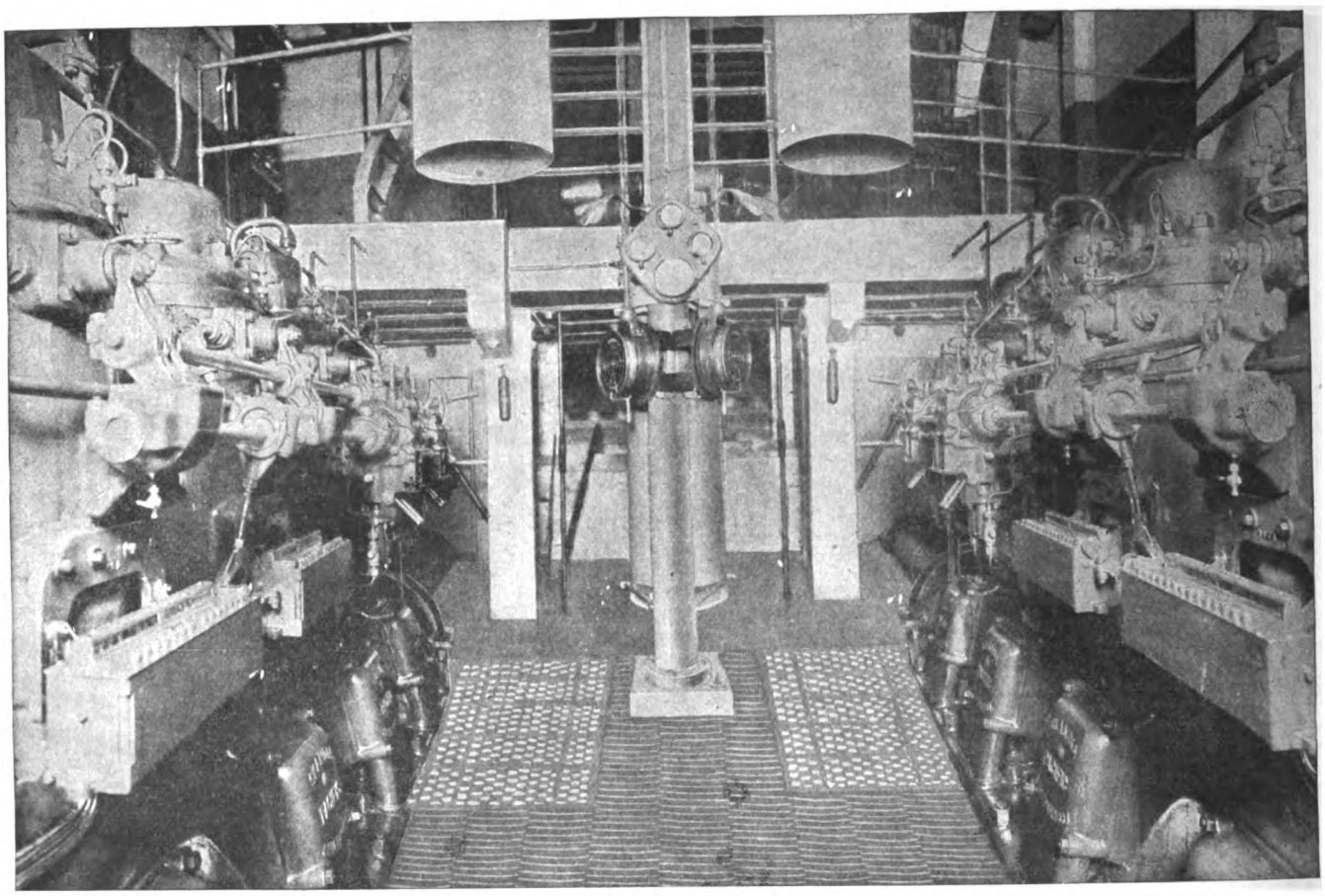

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Three of these were made - The first one four Days after the Receipt of the Order.

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Seattle U.S.A.

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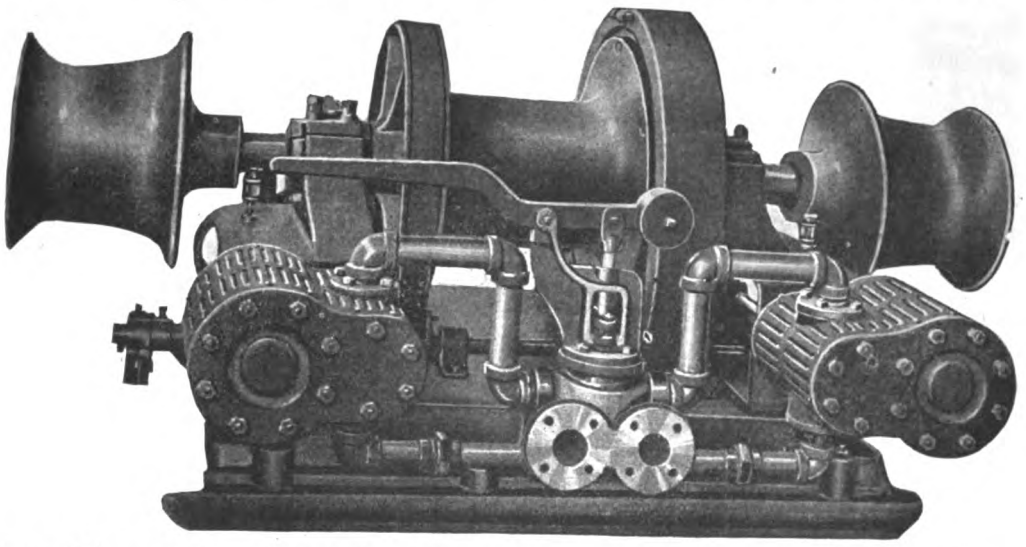

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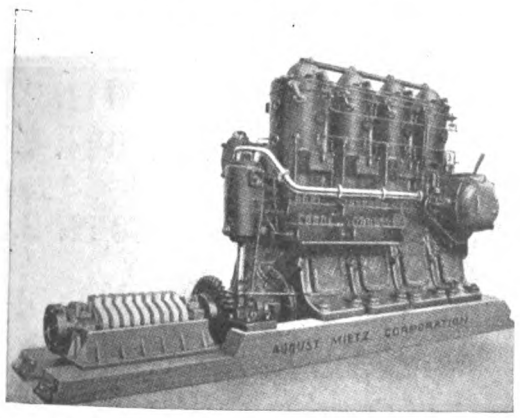

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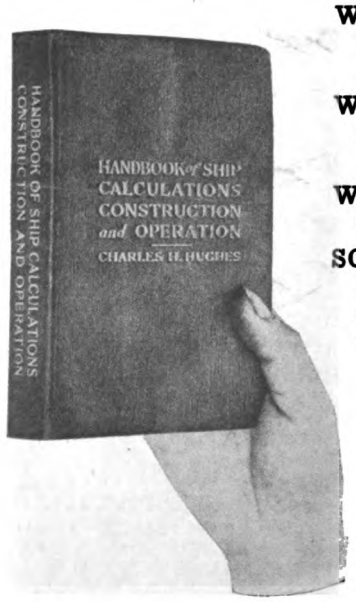

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IGNITION: "Make and Break" or "Jump Spark," optional. Acme "Make and Break" igniters are reliable, simple, and can be removed without taking off any other parts of the engine.

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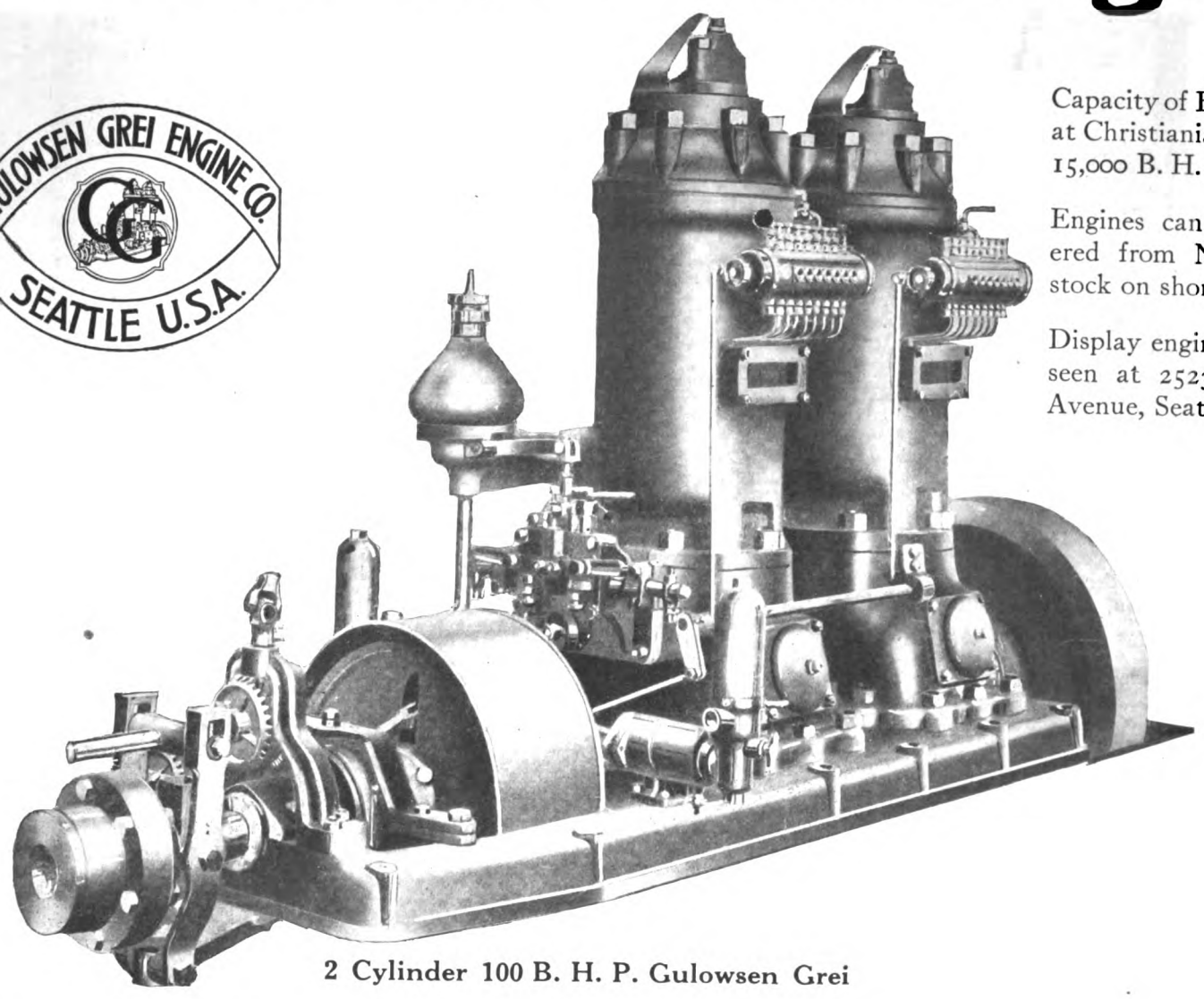

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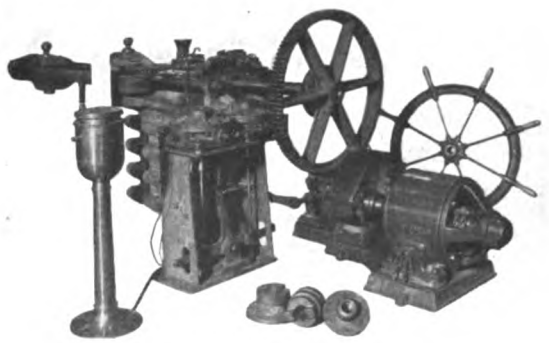

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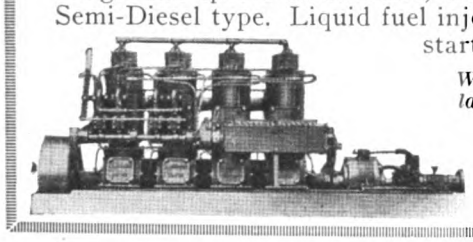

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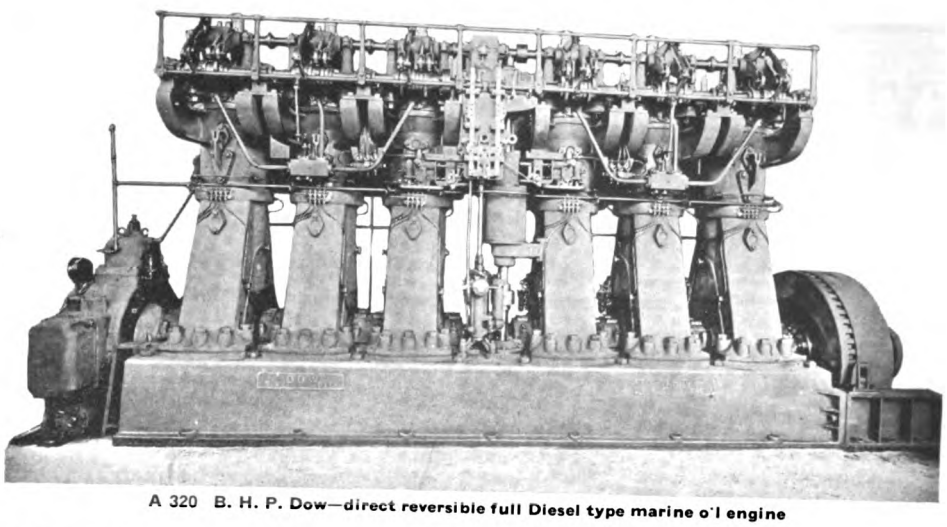

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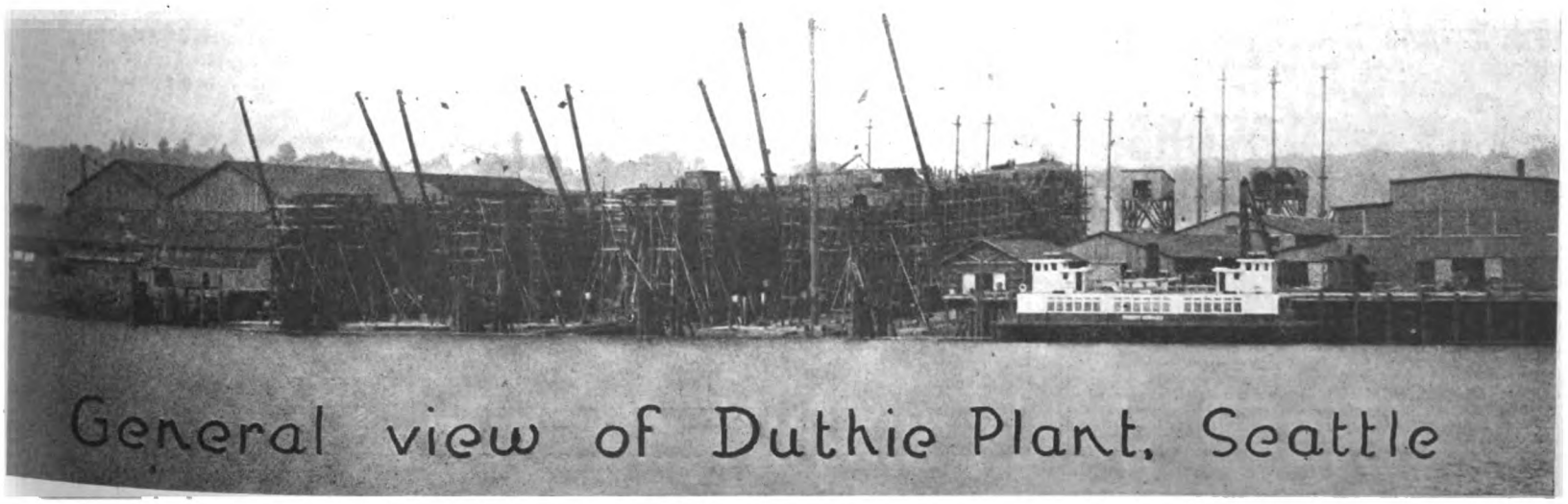

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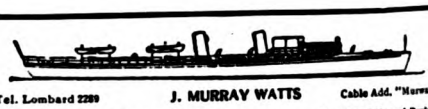

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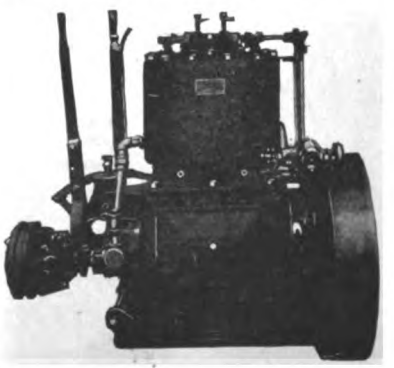

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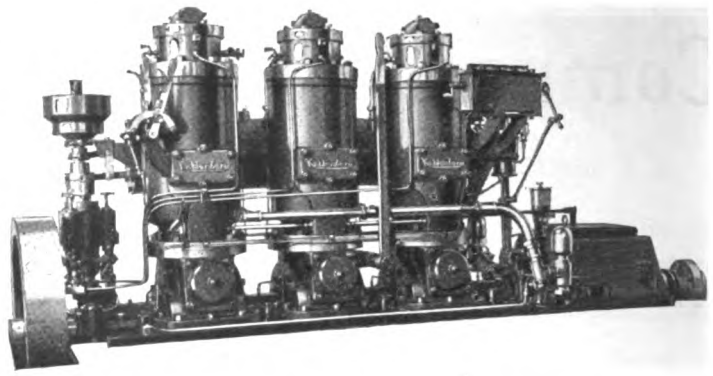

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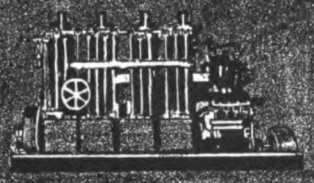

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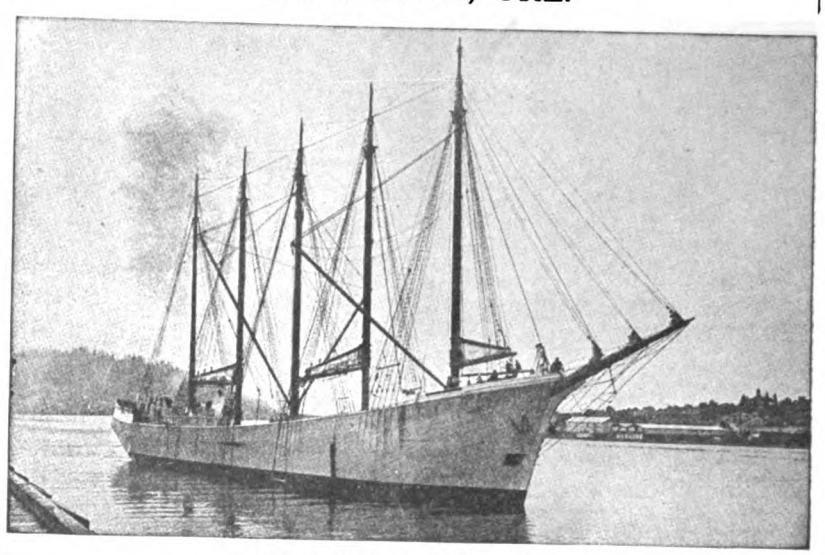

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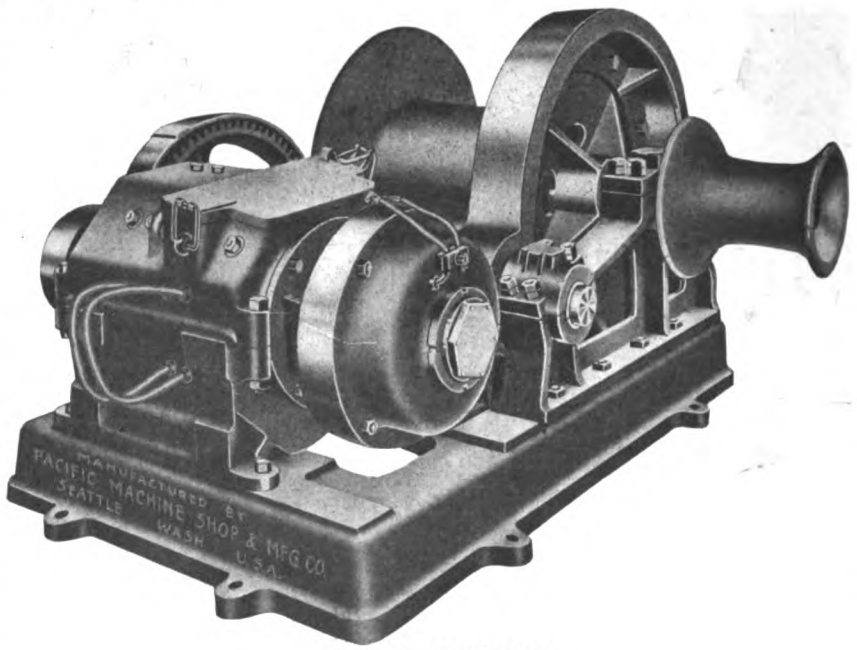

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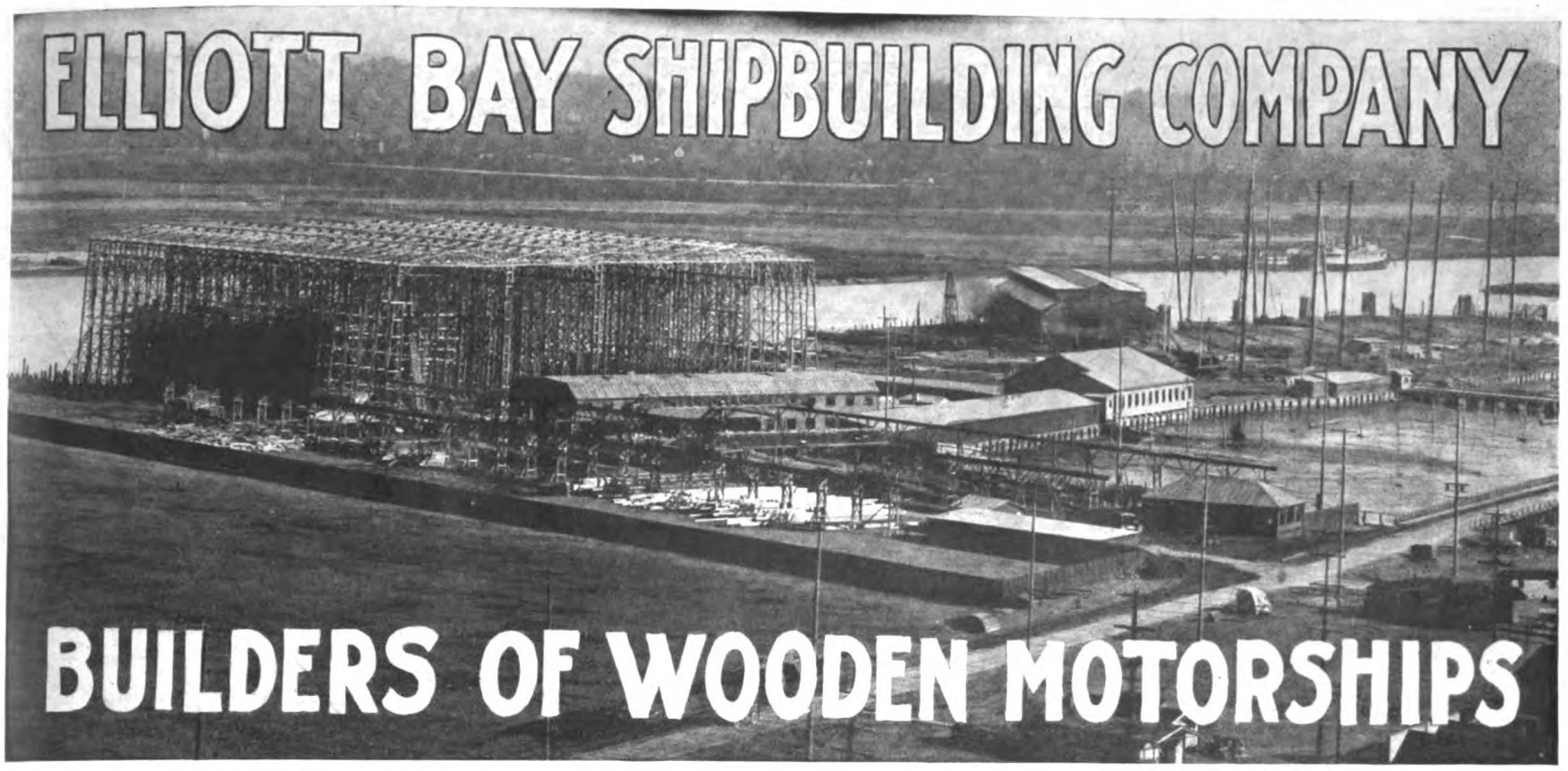

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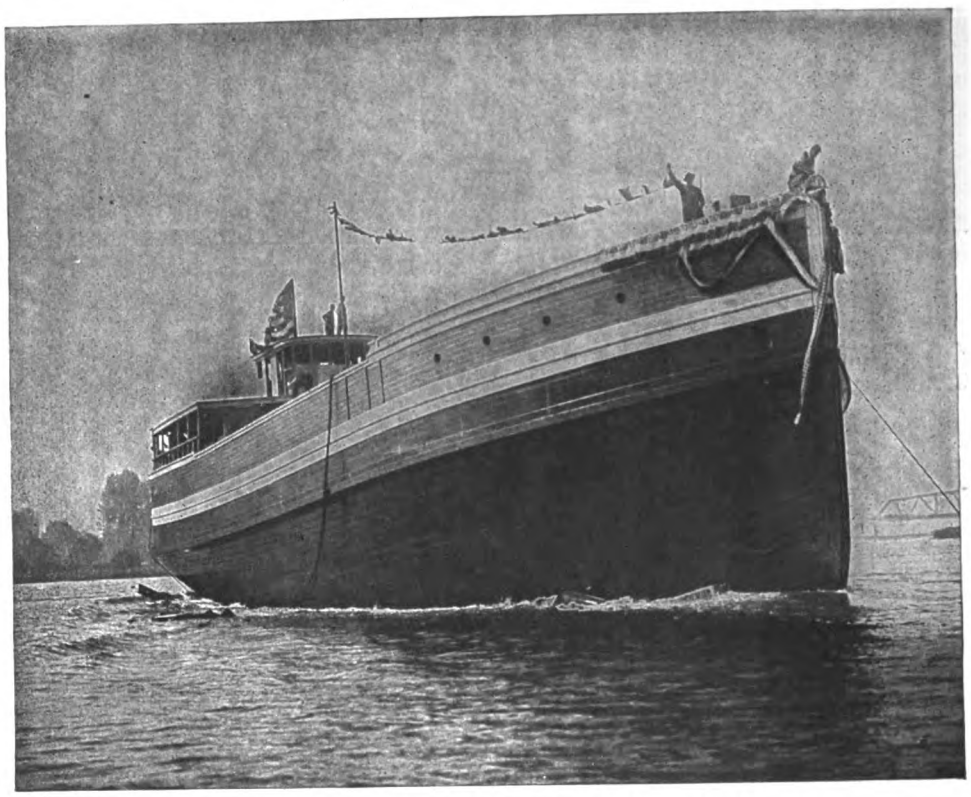

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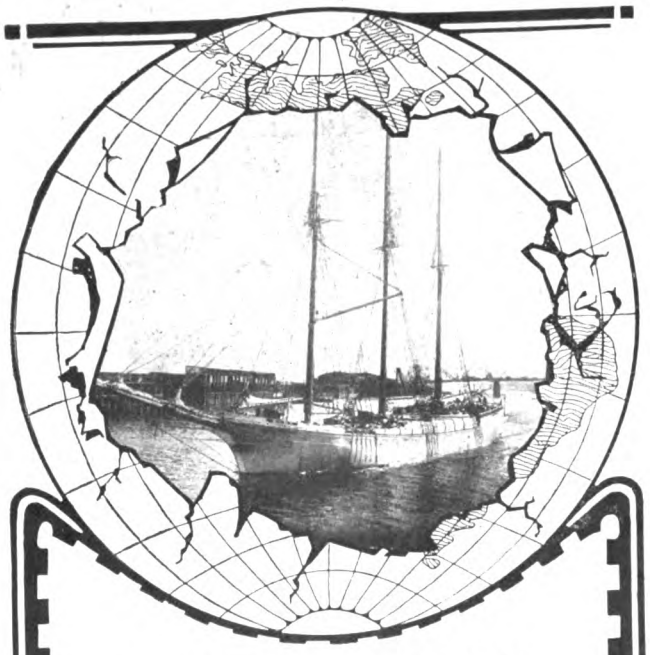

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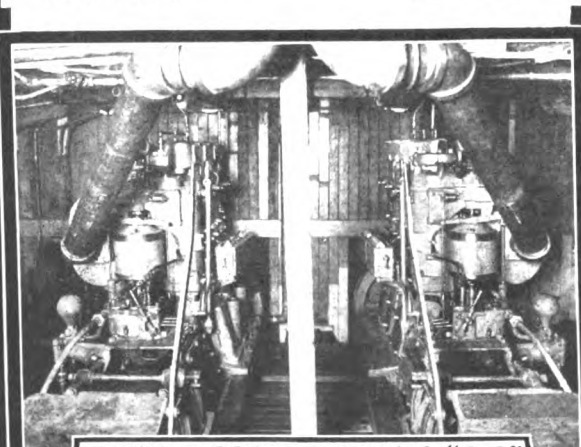

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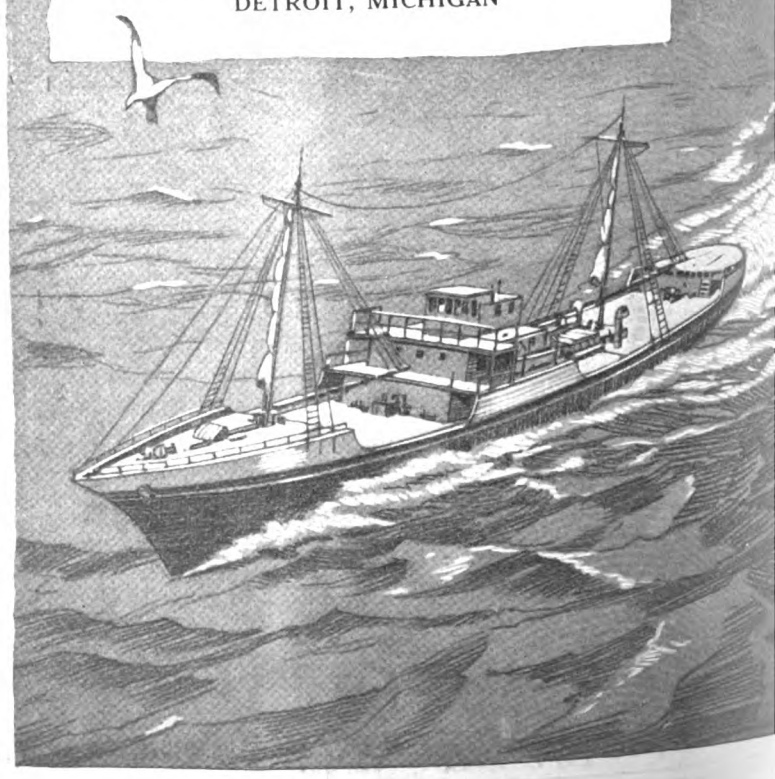

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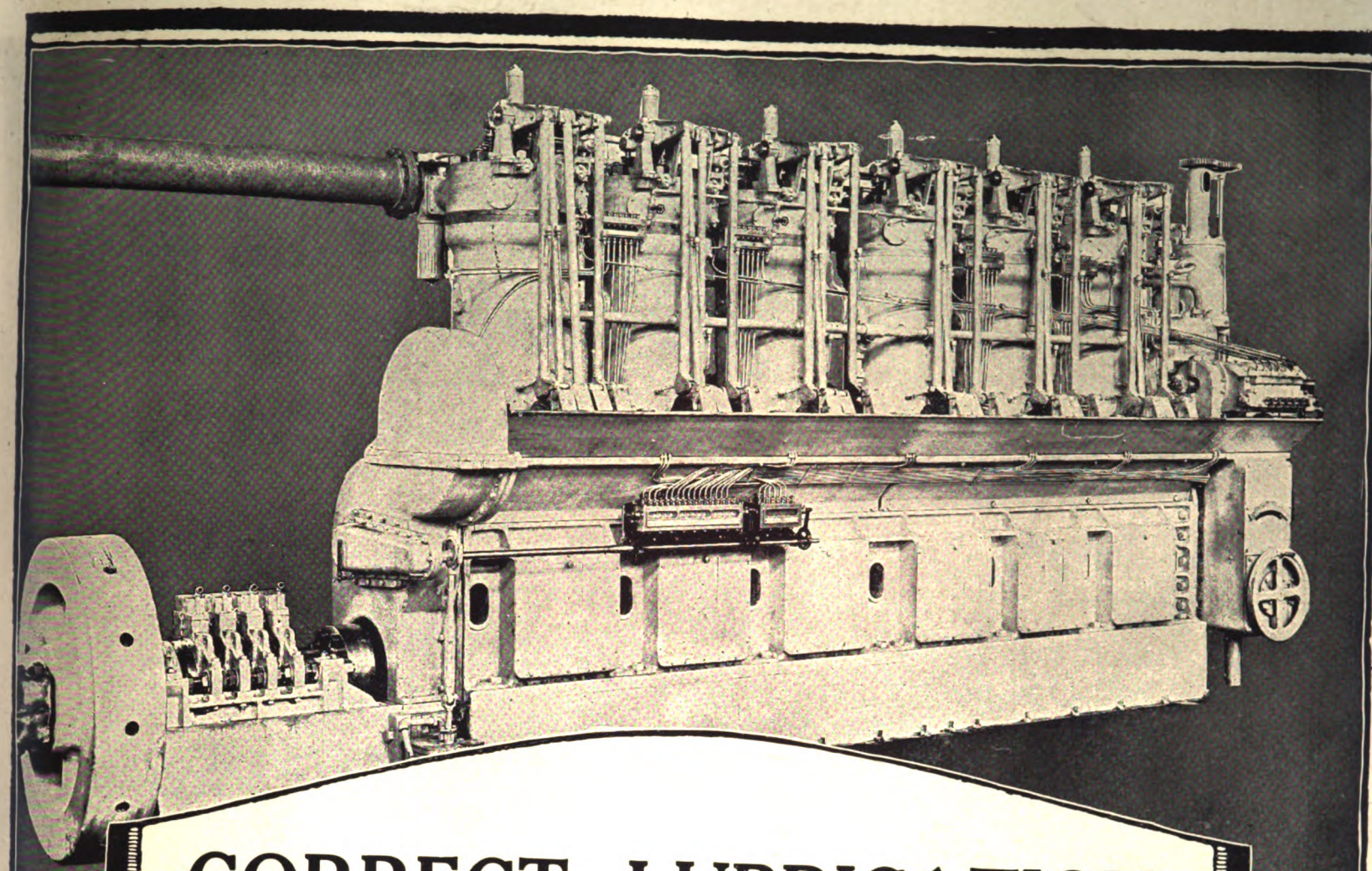

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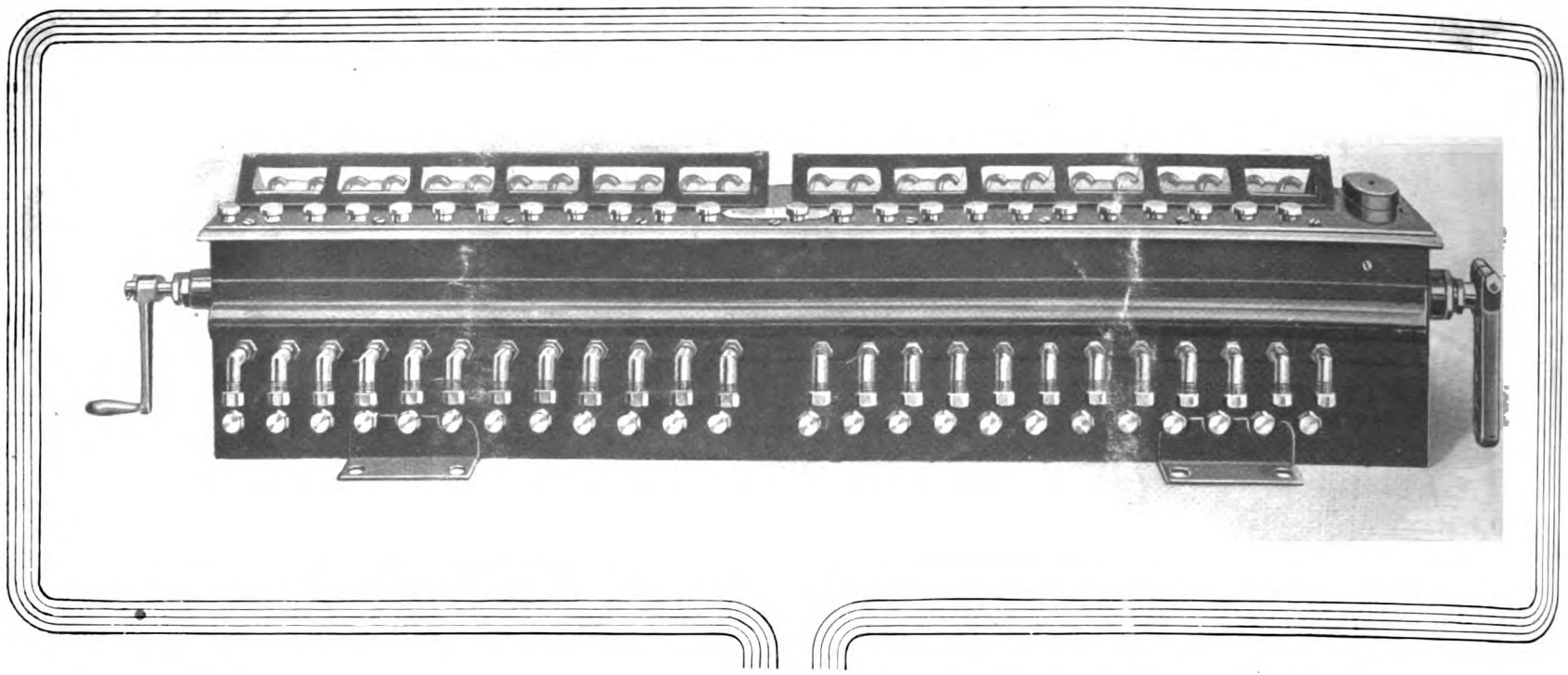

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M.S. SANTA ISABEL.

Voyage No. 1 — MARCH 1918 — Drawn by C.B.DeBernardi - Chief Engr.

Description of voyage #1 - Santa Isabel -
1 Sailed San Francisco Jan 25 - Arrived Seattle Jan 31 -
2 Sailed Seattle Feb 6 Arrived San Francisco Feb 10 -
3 Sailed San fran Feb 14 Arrived San Pedro Feb 16 -
4 Sailed San Pedro Feb 27 - Arrived Amapala Mar 12 -
5 Sailed Amapala Mar 14 - Arrived Acajutla Mar 15 -
6 Sailed Acajutla Mar 15 - Arrived Payta March 23 -
7 Sailed Payta Mar 23 - Arrived Talara Bay Mar 24 -
8 Sailed Talara Bay Mar 27 - Arrived Eten March 28 -
9 Sailed Eten March 30 - Arrived Salaverry Mar 31
10 Sailed Salaverry Mar 31 - Arrived Samanco April 1 -
11 Sailed Samanco April 1 - Arrived Callao April 2 -
12 Sailed Callao April 4 - Arrived Mollendo April 7 -
13 Sailed Mollendo April 8 - Arrived Arica April 9 -
14 Sailed Arica April 9 - Arrived Iquique April 10 -
15 Sailed Iquique April 11 - Arrived Antofagasta April 12 -
16 Sailed Antofagasta April 13 - Arrived Coquimbo April 16 -
17 Sailed Coquimbo April 16 - Arrived Valparaise April 18

- Return Voyage via New York -

18 Sailed Valparaiso April 19 - Arrived Antofagasta April 23
19 Sailed Antofagasta April 25 Arrived Arica April 27
20 Sailed Arica April 27 Arrived Balboa C.Z. May 9 -
Entered canal May 10 - Left canal May 10 - 3.20 P.M.
21 Sailed Cristobal May 10 - Arrived New York May 23 -

Detentions at sea - none Detentions in port. At San Pedro, Cal, discharged cargo and dry-docked to repair outboard shaft coupling. Time lost 113 days
Detentions at any port account of repairs to Engines or cargo hoisting machinery. None
Distance covered 13 850 Miles
Time consumed Four months (or 120 days

C B DeBernardi
Chief Engr.

The log pictured herewith, is from an average voyage of one of 4 sister motorships all equipped with twin sets, 320 B. H. P. Bolinder Fuel Oil Engines and emphasizes the well-established reputation of the Bolinder Engine.

ENGINED WITH TWIN SET OF 320 B. H. P. "BOLINDER" MARINE FUEL-OIL ENGINES.

Present U. S. A. Bolinder Installations 55,000 B.H.P.

Craft under construction and to be fitted with "BOLINDER" Engines in the United States alone aggregate over 145,000 tons; "BOLINDER" Engines now in service, over 12,500

The BOLINDER

THE ENGINE THAT IS NOT A DIESEL
THE ENGINE THAT IS NOT A SEMI-DIESEL
THE ENGINE THAT IS THE BOLINDER
THE STANDARD FOR SURFACE-IGNITION FUEL OIL ENGINES

An example of the ruggedness of the "BOLINDER" Engine was displayed in the case of the M. S. "ASTRI" recently. This vessel encountered a hurricane off Mazatlan and became severely strained, resulting in the flooding of the engine room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

HENRY LUND & CO., Marine Building San Francisco CALIFORNIA

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JACOBSON

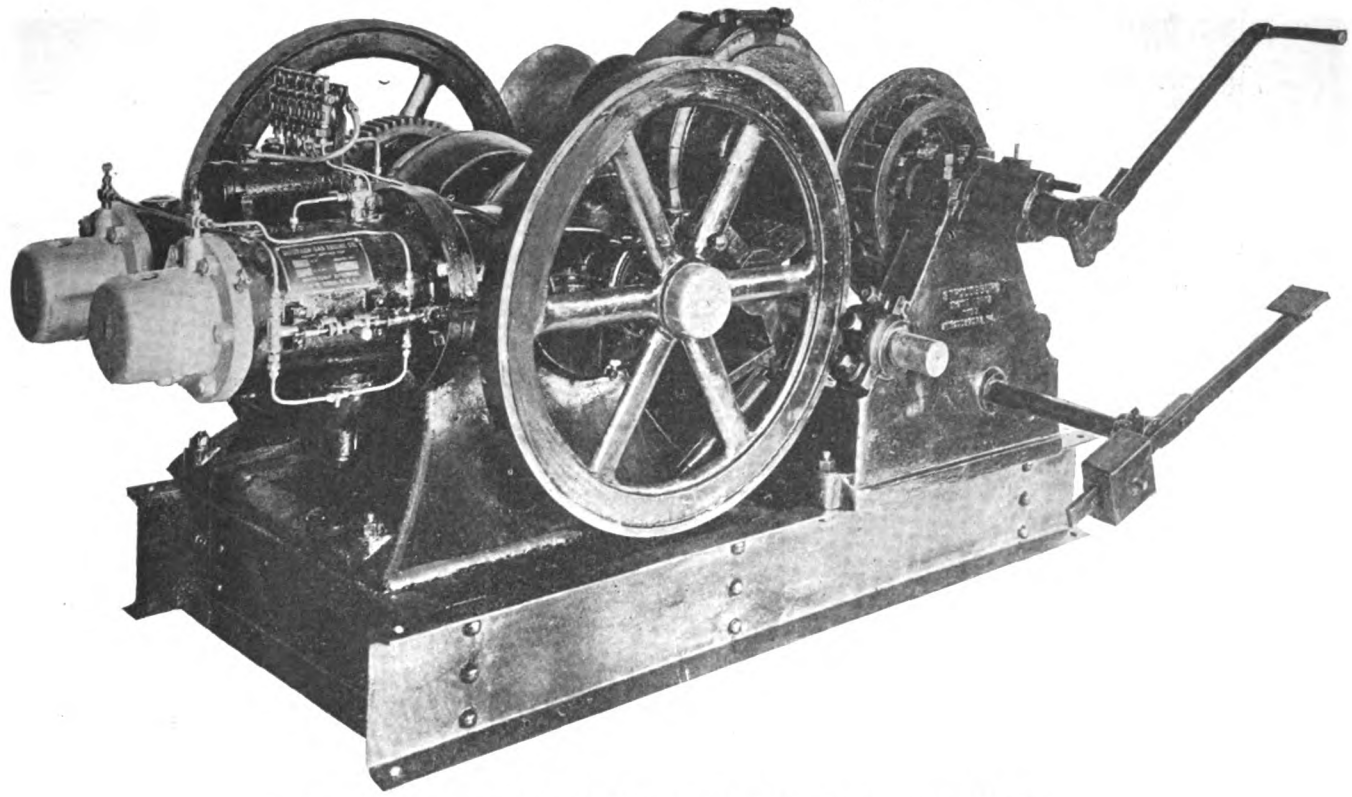
HEAVY-OIL DRIVEN WINCHES

FOR SHIPS AND DREDGES

AND FOR ALL KINDS OF HEAVY CONTRACTING WORK

BUILT IN SIZES FROM 10 H.P. TO 100 H.P.

WITH VERTICAL OR HORIZONTAL TYPE ENGINE



The Above Illustrates a 20 H.P. Jacobson Heavy-Oil Engine Winch

MARINE AND STATIONARY

JACOBSON OIL ENGINES

(Semi-Diesel Principle)

TRUNK PISTON and CROSSHEAD TYPES

QUICK DELIVERIES

Types "C.M." and "C.5." — 10 to 100 B.H.P.

also

Types "B.M." and "B.5." — 15 to 100 B.H.P.

Larger Sizes Fitted with Reverse Gear or Direct Reversible

JACOBSON MARINE OIL ENGINES

contain many new improvements of great importance for economy and for continuous operation.

Correspondence with Prospective Responsible Representatives Solicited. Write to - - - -

THE JACOBSON ENGINEERING CO.

SARATOGA SPRINGS, N. Y.

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A Characteristic Study of Our Great Shipbuilder

Charles M. Schwab giving a "bear hug" to D. E. Skinner, of the shipbuilding firm of Skinner & Eddy, upon his arrival in Seattle. This photograph gives a better idea of the vigor and enthusiasm of America's Director of Shipbuilding than any studio portrait ever could. It also indicates Mr. Schwab's warm appreciation of Skinner & Eddy's record-breaking shipbuilding operations for the Government.

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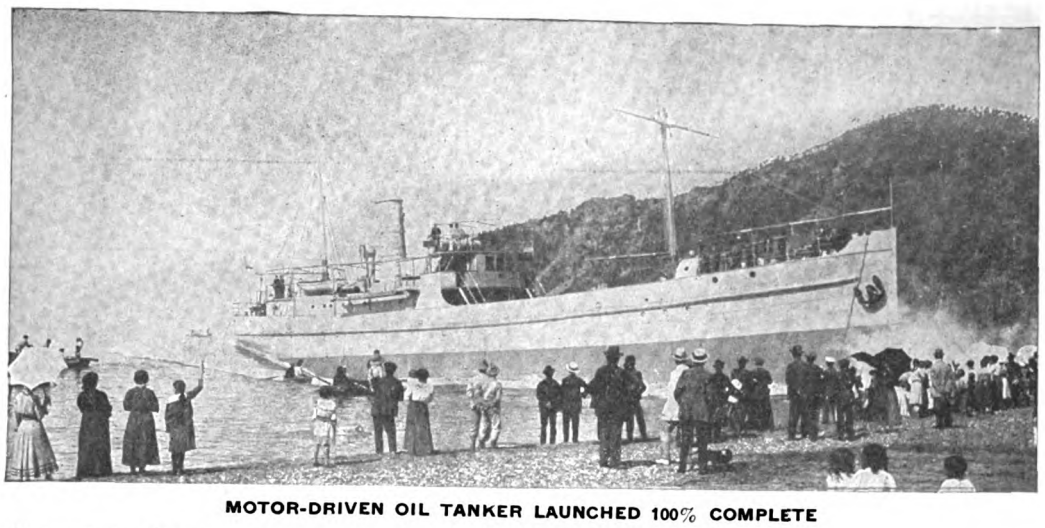

MOTOR-DRIVEN OIL TANKER LAUNCHED 100% COMPLETE

Photo. Societa Escercizio Bacini

Hudson Launching Greases

enable shipbuilders to complete their effort by a successful launching.

HUDSON LAUNCHING GREASES are as essential to the launching ways, as are the ways to the vessel.

LUBRICATION COSTS are not an expense. Rather do they make for economy and efficiency and should be carefully studied.

OUR FACILITIES enable us to provide prompt delivery of all requirements.

INFORMATION will be furnished on request as to best means of preparing ways and essential lubricants for launchings.

Lubrication An Important Factor

Internal-combustion-engines, marine-engines, and machinery must of necessity be well lubricated to obtain efficiency and economy in operation.

Hudson Marine Oils and Hudson Lubricants Meet These Demands

HUDSON OILS AND GREASES once used, are always used.

Write us your requirements

HUDSON OIL COMPANY, Inc.

Marine Department, 109 Broad St., New York City

Cable Address "HUDOIL" **Telephone Broad 4315-6 or Broad 5215**

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EFFICIENCY—ECONOMY—UNIFORMITY

PERFECT LUBRICATION MAY BE SECURED BY USING OUR

DIESEL ENGINE OIL
DIESEL ENGINE OIL HEAVY
GAS ENGINE OIL

Supplies of Lubricating Oils and Greases for any and all requirements may be procured at the following points:

PORTO RICO
CUBA
KINGSTON, JAMAICA
SANTO DOMINGO, R. D.
BERMUDA
BARBADOS, B. W. I.
TRINIDAD, B. W. I.
ST. THOMAS, V. I.
LA GUAYRA, VENEZUELA
BRITISH GUIANA
DUTCH GUIANA
COLON, PANAMA
PANAMA CITY, PANAMA
CORINTO, NICARAGUA
PUERTO BARRIOS, GUATEMALA
BELIZE, BRITISH HONDURAS
GUAYAQUIL, ECUADOR
BUENOS AIRES, A. R.
MONTEVIDEO, URUGUAY

WEST INDIA OIL COMPANY

AMERICAN-HAWAIIAN STEAMSHIP CO.

(BONDED LINE)

THE PANAMA CANAL LINE

ALL SAILINGS BETWEEN U. S. ATLANTIC AND U. S. PACIFIC PORTS CANCELED UNTIL FURTHER NOTICE

OPERATING THE FOLLOWING

S. S. "ALASKAN"—12,000 tons, twin screw
S. S. "AMERICAN"—8,000 tons
S. S. "ARIZONAN"—12,000 tons, twin screw
S. S. "CALIFORNIAN"—8,000 tons
S. S. "DAKOTAN"—10,000 tons
S. S. "FLORIDAN"—10,000 tons
S. S. "HAWAIIAN"—8,000 tons
S. S. "IOWAN"—10,000 tons
S. S. "KANSAN"—12,000 tons, twin screw
S. S. "KENTUCKIAN"—10,000 tons
S. S. "MEXICAN"—12,000 tons, twin screw
S. S. "MINNESOTAN"—10,000 tons
S. S. "MONTANAN"—10,000 tons
S. S. "OHIOAN"—10,000 tons
S. S. "OREGONIAN"—8,000 tons
S. S. "PANAMAN"—10,000 tons
S. S. "PENNSYLVANIAN"—10,000 tons
S. S. "TEXAN"—12,000 tons, twin screw
S. S. "VIRGINIAN"—12,000 tons, twin screw

ALL OF THE COMPANY'S STEAMSHIPS ARE FITTED WITH THE GRIMM FIRE EXTINGUISHING APPARATUS

DEARBORN & LAPHAM, General Agents, No. 8 Bridge Street, New York.
C. K. MAGILL, Agent, Seattle, Tacoma, Wash.
C. D. KENNEDY, Agent, Portland, Oregon.
H. W. ROBERTS, Agent, Los Angeles, Cal.
T. L. BURKE, Agent, San Diego, Cal.
SAMUEL PRAY, Agent, Boston, Mass.
WILLIAMS, DIMOND & COMPANY, General Agents for the Pacific Coast, No. 310 Sansome St., San Francisco, Cal.
H. HACKFELD & CO., Ltd., Agents, Honolulu, T. H.
THEO H. DAVIES & CO., Ltd., Agents, Hilo, T. H.
ALEXANDER & BALDWIN, Ltd., Agents, Kahului, T. H.
W. F. HAGAR & CO., Agents, Philadelphia, Pa.
STREET BROS., Agents, Charleston, S. C.

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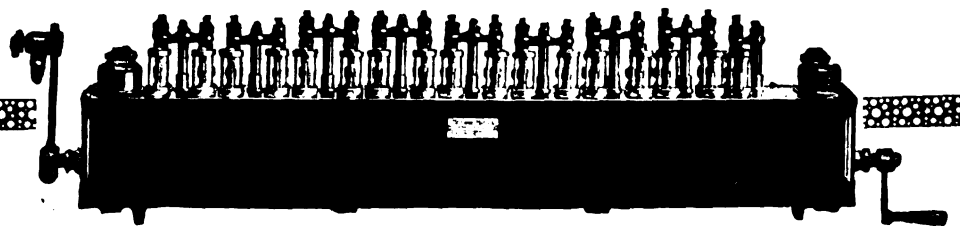


Positive Dependable Lubrication for Your Motor Boat with 25% to 50% Less Oil

There is never any question about the lubrication of your McCord equipped motor boat—you can be absolutely sure of right oiling at all times—and right oiling means 25% to 50% less fuel.

In the beginning you set the flow of oil to fit your particular conditions—and thereafter the large clear sight feeds keep you constantly assured that you are delivering just the right amount of oil—at just the right time—in just the right place.

McCord Force Feed Lubricators

operate perfectly regardless of temperature—viscosity of oil, pressure, vacuum or length of feed lines—enabling your engine to stand right up to full capacity.

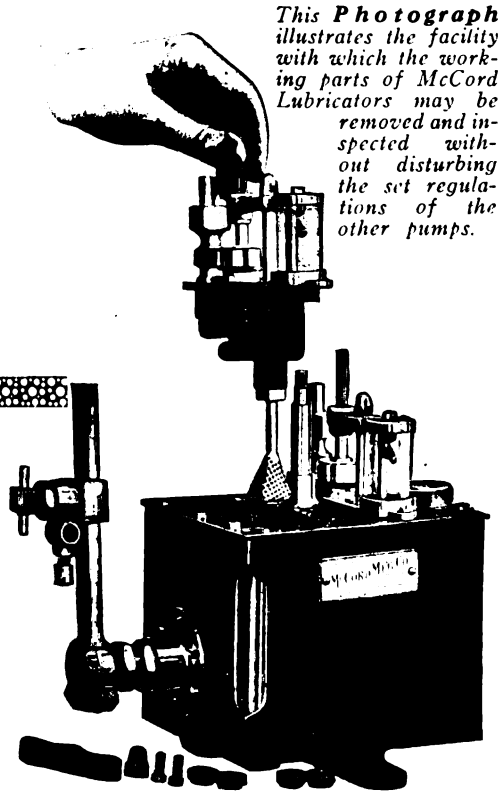
The four big factors back of McCord superiority are:

(1) Unit construction permitting the removal for inspection of individual pump units without disturbing the set regulation of other pumps.

(2) Rachet drive located inside of reservoir and running in oil.

(3) Unusually large sight feeds.

(4) Positively WILL NOT CORRODE IN SALT WATER SERVICE.



*This **Photograph** illustrates the facility with which the working parts of McCord Lubricators may be removed and inspected without disturbing the set regulations of the other pumps.*

Correct Lubrication Certain

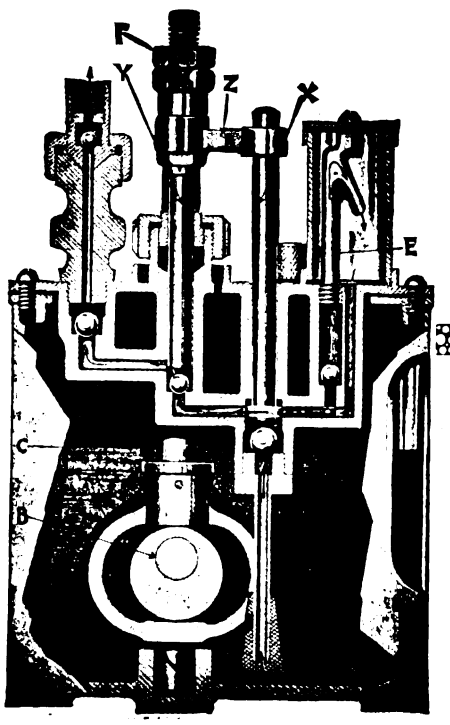
All working parts are made of the best material for the service performed and are constantly running in oil, thus minimizing wear to the last degree.

Every pump unit is tested against 100 pounds pressure.

An auxiliary hand crank is provided for flushing the cylinder when starting or accelerating oil delivery at any time.

The McCord starts, stops and changes speed with the engine—no wastage of oil under varying conditions.

Let us send you a catalog—and complete particulars on the operation of McCord Force Feed Lubricators.



McCord Manufacturing Company, Inc.
DETROIT - - MICHIGAN

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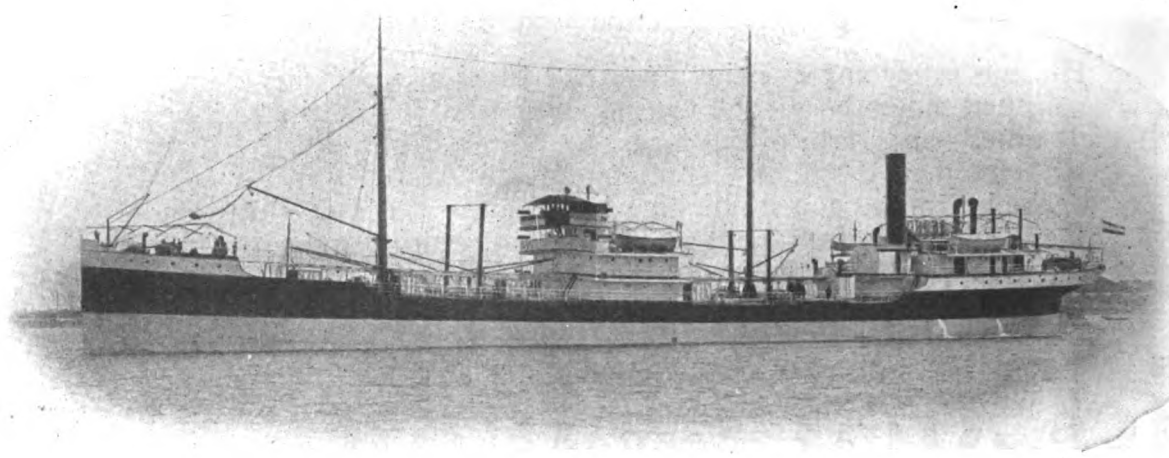
OIL FUEL

THE FUEL OF THE 20th CENTURY



ONE OF OUR FLEET OF OIL-CARRYING MOTORSHIPS

The Asiatic Petroleum Co., Ltd.

ST. HELEN'S COURT, GREAT ST. HELENS, LONDON, E. C., ENGLAND

are prepared to supply OIL FUEL at

Adelaide	Curacoa	Palembang	Port Said	Shanghai
Alexandria	Hong Kong	Panama Canal (both ends) (completed)	Puloe Samboe	Singapore
Balik Pappan	Karachi	Pangkalan Berandan	Rotterdam	Soerabaya
Bangkok	Lisbon (completed)	Penang	Sabang	Suez
Batavia	Madras	Portland, Oregon, S. S. A. (building)	Saitozaki	Sydney
Bombay	Melbourne		San Francisco	Tampico
Calcutta	Montreal		San Pedro	Tarakan
Cape Town	Nagasaki		Seattle, Washington, U. S.A. (building)	Thameshaven
Colombo				Vancouver (building)

Note.—During the war it is not possible to keep stocks at some of the above-named ports. It is therefore advisable for intending buyers to enquire whether stocks are available.

Buyers desiring information regarding supplies of and prices for **OIL FUEL** for use in Internal-combustion Engines or for other purposes should apply to **THE ASIATIC PETROLEUM COMPANY, LIMITED**, at the above address.

The Asiatic Petroleum Company also supply **KEROSENE OIL** for use in the smaller Internal-combustion Engines and are prepared to supply **PETROLEUM SPIRITS, LUBRICATING OILS, WAX** and **GREASES** in all far Eastern Markets.

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SHARE CAPITAL

100 MILLIONS OF LIRE (Fully Paid)

Societa Anonima Italiana

GIO. ANSALDO & CO.

Registered Office, Rome

Administrative and Industrial Office, Genoa, Italy

THE GIO. ANSALDO & C. WORKS, founded by the PRIME MINISTER CAVOUR in 1853 under the Direction of the distinguished engineer, GIOVANNI ANSALDO, had, especially under the subsequent Management and Direction of the Bombrini Brothers, a prosperous career, during which the manufacture was extended from early Locomotives to Marine Engines and to Shipbuilding and other Naval Work. The greatest impulse, however, was given by the late Comm. Ferdinando Maria Perrone in 1904, when the Firm was transformed into the present LIMITED SOCIETY to attain wider scope, which has now been fully realized by his Sons. The original WORKS OF SAMPIERDARENA and the SHIPYARD OF SESTRI PONENTE have recently been greatly enlarged and augmented by other ESTABLISHMENTS and associated CONCERNS, devoted not only to mercantile and Naval Shipbuilding in all its branches, but also to armour plate, guns, and war material of all kinds.

The SOCIETY has at present at work, in its own 28 ESTABLISHMENTS and other associated CONCERNS as hereunder enumerated, about 50,000 hands, men and women, and is capable of building and is building:—

1st—Warships and mercantile vessels of all kinds and sizes from big Super-dreadnoughts and ocean liners to destroyers, torpedo boats, submarines, cargo steamers, tug boats, motor boats, etc.
2nd—Diesel marine oil engines up to 2,000 b. h. p., also marine steam propelling engines, both reciprocating and turbine engines with and without gearing.
3rd—Steam boilers, both water-tube and cylindrical, of all types and sizes.
4th—Locomotives and tenders complete, and Machine Tools.
5th—Armour plates, guns, armoured turrets complete, ammunition complete, metallic cartridges and casings.
6th—Auxiliaries for propelling machinery, and all kinds of auxiliary machinery for ships, such as steering gears, capstans, winches, distilling condensers, and screw propellers.
7th—Dynamos and all electric appliances, auxiliary electric machinery both for ship and land service, electric gear for turrets and guns, elevators, steering gears, electric capstans and winches, cranes and electric propelling machinery.
8th—Aeroplanes and their motors.
9th—Steel, cast iron and bronze castings of all varieties and sizes.
10th—Steel forgings of all kinds and sizes, special steels, and Files.
11th—Boiler steel tubes, steel, iron, copper and brass pipes.
12th—Furniture of all descriptions, both wood and metallic, for warships, liners and mercantile vessels.

List of Establishments

1.—General Engineering Works	SAMPIERDARENA
2.—Locomotive Construction Works	SAMPIERDARENA
3.—Artillery and Big Gun Works	SAMPIERDARENA
4.—War Munition Works	SAMPIERDARENA
5.—Aeroplane Motor Works, San Martino	SAMPIERDARENA
6.—Cast Steel Foundry	CORNIGLIANO LIGURE
7.—Armour Plates and Forging Plant	CORNIGLIANO LIGURE
8.—Oxygen and Hydrogen Production Plant	CORNIGLIANO LIGURE
9.—New Artillery and Big Gun Works	CORNIGLIANO LIGURE
10.—Electric Products Plant	CORNIGLIANO LIGURE
11.—Bronze Foundry	CORNIGLIANO LIGURE
12.—Delta Metal and Alloys Foundry	CORNIGLIANO LIGURE
13.—Brass Cartridge Works	CORNIGLIANO LIGURE
14.—Internal-Combustion Engine Works	CORNIGLIANO LIGURE
15.—Aeroplane Works No. 1 (Marine Hangars)	LORZOLI (Mare)
16.—Aeroplane Works No. 2	BOLZANETO
17.—Aeroplane Works No. 3	TORINO (Corso Peschiera 251)
18.—Tube Mills	FEGINO (Val Polcevera)
19.—Projectile-Case Works	FEGINO
20.—Naval Shipyard	SESTRI PONENTE
21.—Saw Mill and Boat Yards	VOLTRI
22.—Ammunition Works	SESTRI PONENTE
23.—Cast Iron Foundry	PEGLI
24.—Fire Brick Plant	STAZZANO (Serravalle Scrivia)
25.—Genoa Shipyards	MOLOGIANO (Porto di Genova)
26.—Iron Mines	COGNE (Valle d'Aosta)
27.—Electric Furnaces for Steel and Pig Iron and Rolling Mill	AOSTA
28.—Special Alloys Plant	AOSTA

Associated Concerns

1.—Shipyard and Works, Savoia	CORNIGLIANO LIGURE
2.—Shipyard and Works, Fiat San Giorgio	SPEZIA
3.—Internal-combustion Engine Works, Fiat San Giogio	TORINO
4.—Ore Mines	COGNE (Val d'Aosta).
5.—Italian National S.S. Company	GENOVA
6.—Lignite Mines	GROSSETO (Tuscany).
7.—Cerpelli's Centrifugal and Turbine Pump Works	LA SPEZIA
8.—Westinghouse Company	VADO LIGURY
9.—Magnesite Mines	QUAREIDUELLO (Tuscany)
10.—Insulators Company	LEGHOURN

FIAT-SAN GIORGIO HIG

THE ANSALDO-BUILT BA
THE ROY

SUBMARINE

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each

Now Building at Sestri Ponente

American Branch: 80

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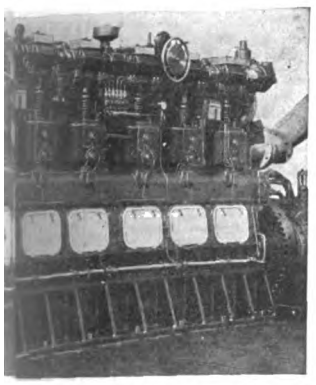

ED MOTOR, 1350 B. H. P.

P "GULIO CESARE" OF
AN NAVY

AN GIORGIO"

en Lane, New York City

SHARE CAPITAL
22 MILLIONS OF LIRE (Fully Paid)

ANSALDO-SAN-GIORGIO

(LIMITED)

Ex Fiat-San-Giorgio

Shipyard, Muggiano (Spezia)
Offices and Engine Works, Turin, via Cuneo, 20, Italy

Specialists in the construction of

Diesel and Steam Cargo Vessels, Torpedo Boats, Submarines Diesel-Engined Submarine Chasers and Heavy-Oil Marine Motors

(Type Fiat-San Giorgio)

such as were supplied to the Navies of

Brazil, Denmark, Great Britian, Italy, Portugal, Spain, Russia, Japan, United States and Sweden, and Germany (before the war)

Complete Construction of War and Merchant Ships. Cargo and Passenger Vessels of any Capacity. Ships equipped and repaired.

Heavy-Oil Marine Motors, type Fiat-San Giorgio, for War and Merchant Ships of any capacity.

The Fiat-San Giorgio plants, which now show a continuous industrial development, will employ from 18,000 to 20,000 workingmen during the current year.

The Italian Emergency Fleet

The Spezia Shipyard every year will launch not less than 18 standardized Diesel Motorships of 8,100 to 10,000 tons D. W. capacity each, with complete equipment and machinery built by the FIAT-SAN GIORGIO exclusively, while the output of submarines and torpedo-boats will remain undiminished.

Guaranteed Results for Merchant Ship Motors (Model 2 cy.—175=1200 b. h. p.)

—Reversing Motors from full ahead to full astern done in ten seconds.

—Fuel Consumption two-cycle engines, 0.45 lbs. heavy oil, high density containing up to 20% Pitchy and Tarry Matters.

—Lubricating Oil Consumption 0.017 lbs.

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each

Now Building at Muggiano (Spezia)

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Ransome Compasses

and

Binnacles

For Full-Powered and Auxiliary-Powered Motorships

Also for

Steamships, Yachts, Cruisers, Steam and Gas Launches, Workboats of All Kinds and Lifeboats

Request a Sample of Your Nautical Optician, or for Smaller Sizes Ask Your Jobber

I. C. RANSOME

2815 Jackson Street Seattle, Wash.

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NLSECO HEAVY-OIL ENGINES

ANNOUNCEMENT

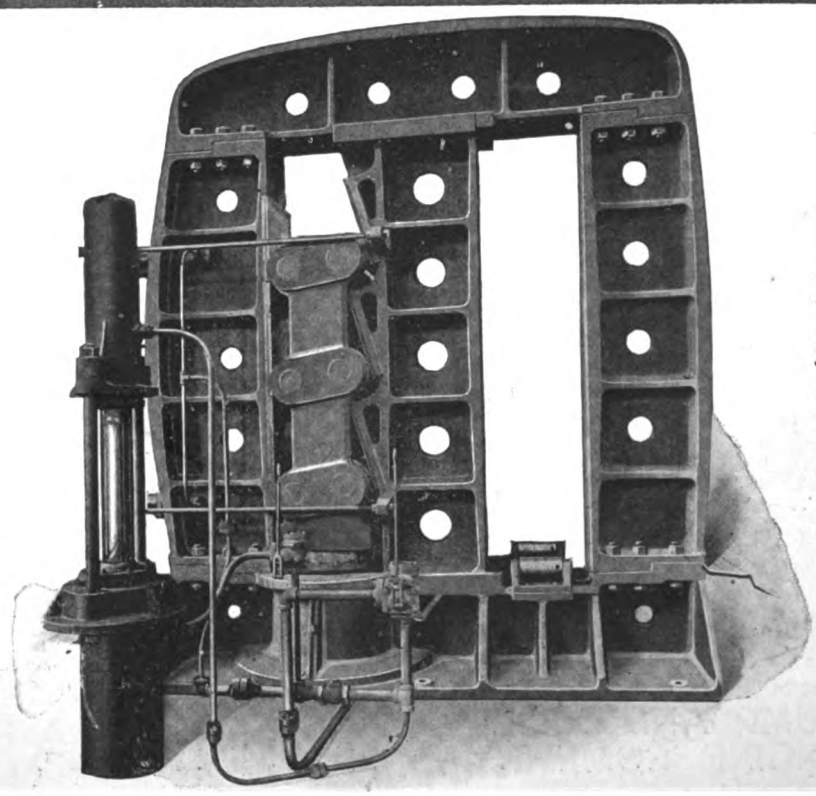
Owing to the capacity of our plant being completely occupied with the construction of Marine Diesel engines for the U. S. government, we regret we are unable to make any definite quotations to private interests during the remainder of this year. May we take your carte blanche order for delivery when conditions permit? Such deliveries will be made in strict rotation.

NEW LONDON SHIP and ENGINE CO.
Groton, Conn., U. S. A.

AMERICA'S PREMIER MARINE DIESEL MOTOR

SOUTHWARK

For Bending 12 feet of 2 inch Plate, the 1,000 Ton Bender Gives Economical Results



Operates with Low Pressure in Conjunction with an Intensifier or Direct Form 1,500 Pound Line

1,000 TON VERTICAL PLATE BENDER

SOUTHWARK FOUNDRY & MACHINE CO., 400 Washington Ave., Phila., Pa.

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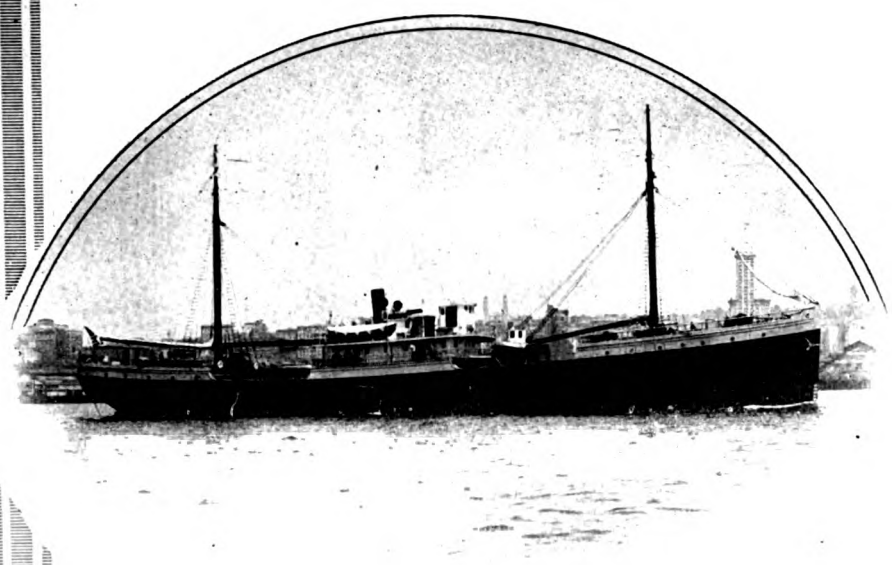


THE MOTORSHIP "LIBBY MAINE"

IN EVERY WAY A SUCCESS

Said Capt. Herre, Master of the Motorship "Libby Maine," of the performance of the Engines

The Maiden Voyage
of the
FULL-POWERED MOTORSHIP
"LIBBY MAINE"

Equipped with Two 320 b.h.p.

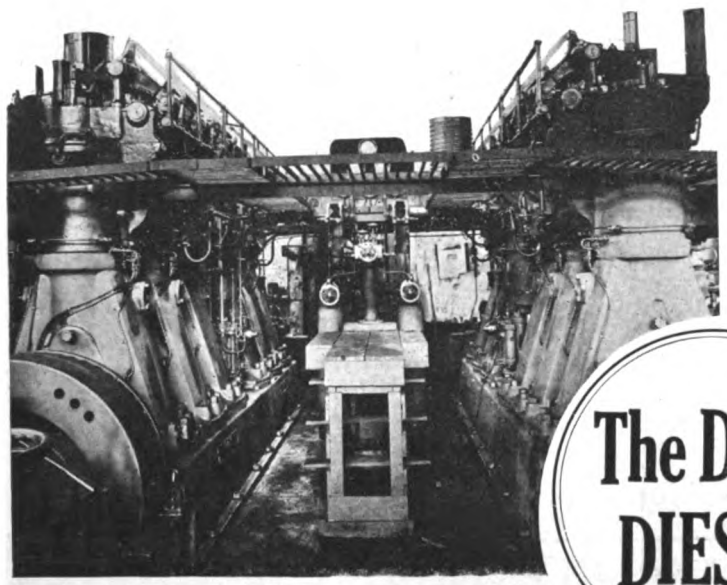
DOW FULL-DIESEL TYPE

Engines, Demonstrated that the

DOW-DIESEL

Is Economical, Thoroughly Reliable and Efficient and that

They ARE a Success



The Twin 320 B.H.P. Dow Engines of the "Libby Maine", on the test blocks, Alameda.

The DOW-DIESEL

DOW PUMP AND DIESEL ENGINE COMPANY ALAMEDA, CALIF.

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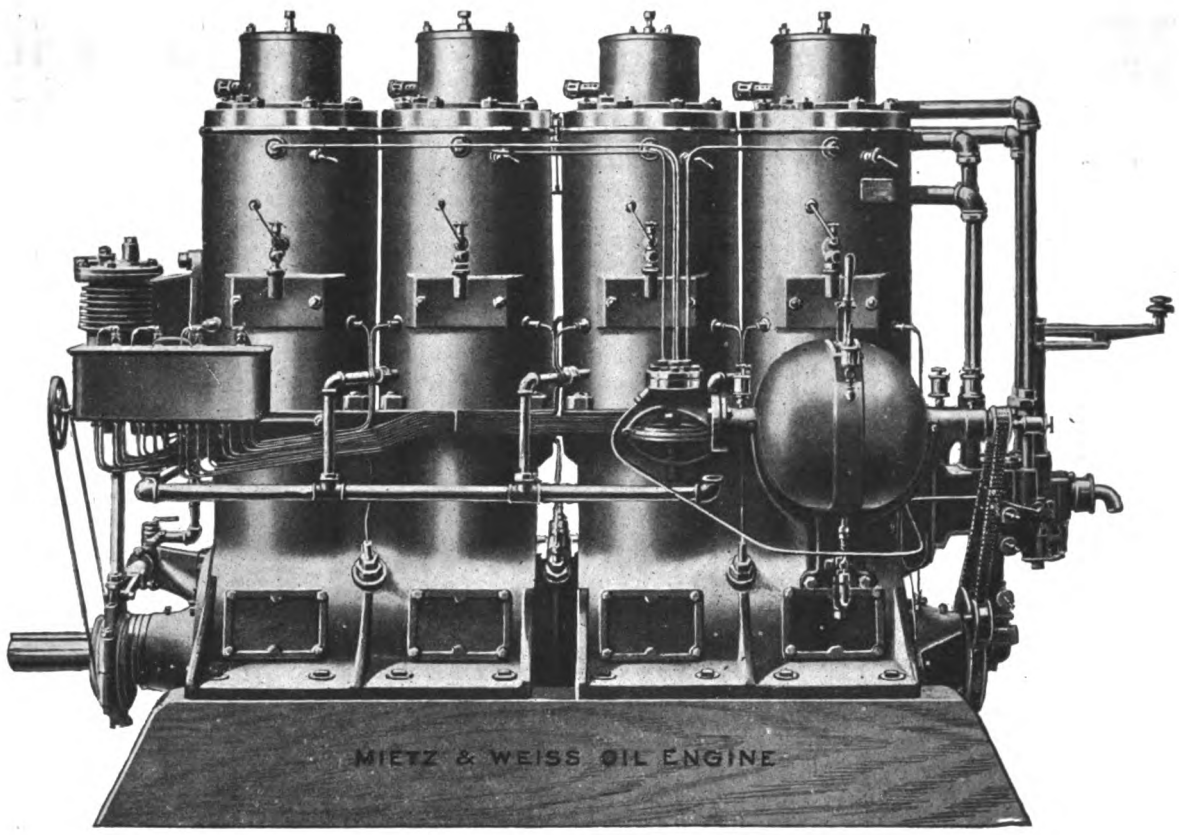
AMERICA'S PREMIER

Marine Oil Engine

FOR THE

PROPULSION OF MERCHANT SHIPS

OVER 350,000 H. P. IN OPERATION



Economical Operation On Low-Priced Fuel-Oils

AUGUST MIETZ CORPORATION

138 MOTT STREET
NEW YORK, N.Y.
U. S. A.

BUILT IN SIZES
FROM 40 B. H. P.
TO 350 B. H. P.

MAY WE MAIL
YOU OUR
CATALOGUE?

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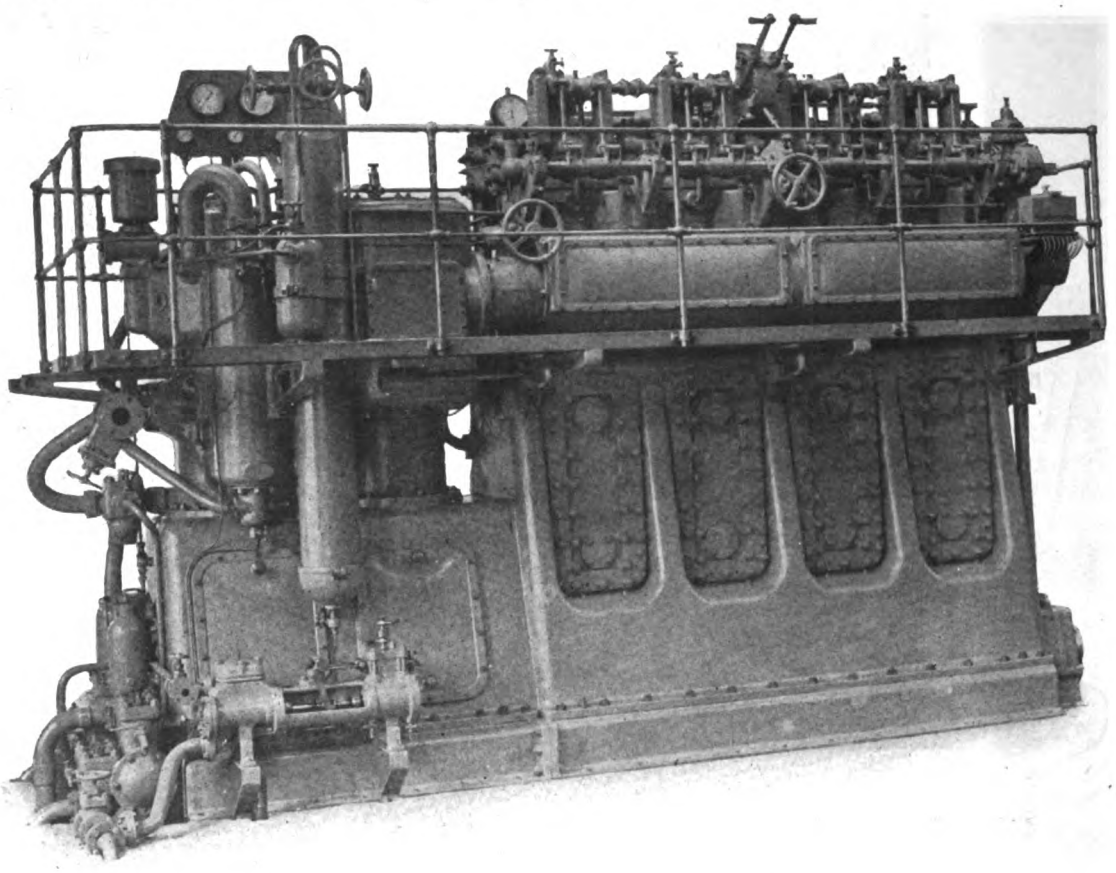
SULZER
FRÈRES

SULZER TWO-CYCLE DIESEL
MERCHANT MARINE and SUBMARINE ENGINES

STANDARDIZED SIZES:
150 b. h. p. to 4,000 b. h. p. per engine
in four and six-cylinder units

TOTAL OUTPUT OF TWO-CYCLE ENGINES 255,000 B. H. P.



The 450 B. H. P. Sulzer Two-Cycle Direct-Reversible Marine Engine
77 Engines of This Size Already Built for Naval and Mercantile Vessels

BUSCH-SULZER BROS. DIESEL ENGINE CO.
ST. LOUIS, MO.

Sole Owners of All Rights for Sale and Manufacture of Sulzer Diesel Engines for Installation in the U. S. A. and Its Possessions; Panama and Canada

WINTERTHUR, SWITZERLAND.

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SIMPLIFIED ARC WELDING EQUIPMENT

Now Ready to Demonstrate

Before ordering your welding equipment investigate the General Electric Company's novel welding system. Some of its points of superiority are:

1. **Constant Energy**
2. **Shortest known arc**
3. **High efficiency**
4. **Resistance in series with arc**

By the use of this equipment good operators are producing consistently perfect welds.

We are prepared to demonstrate this equipment and make good deliveries.

(43-42)

GENERAL ELECTRIC COMPANY

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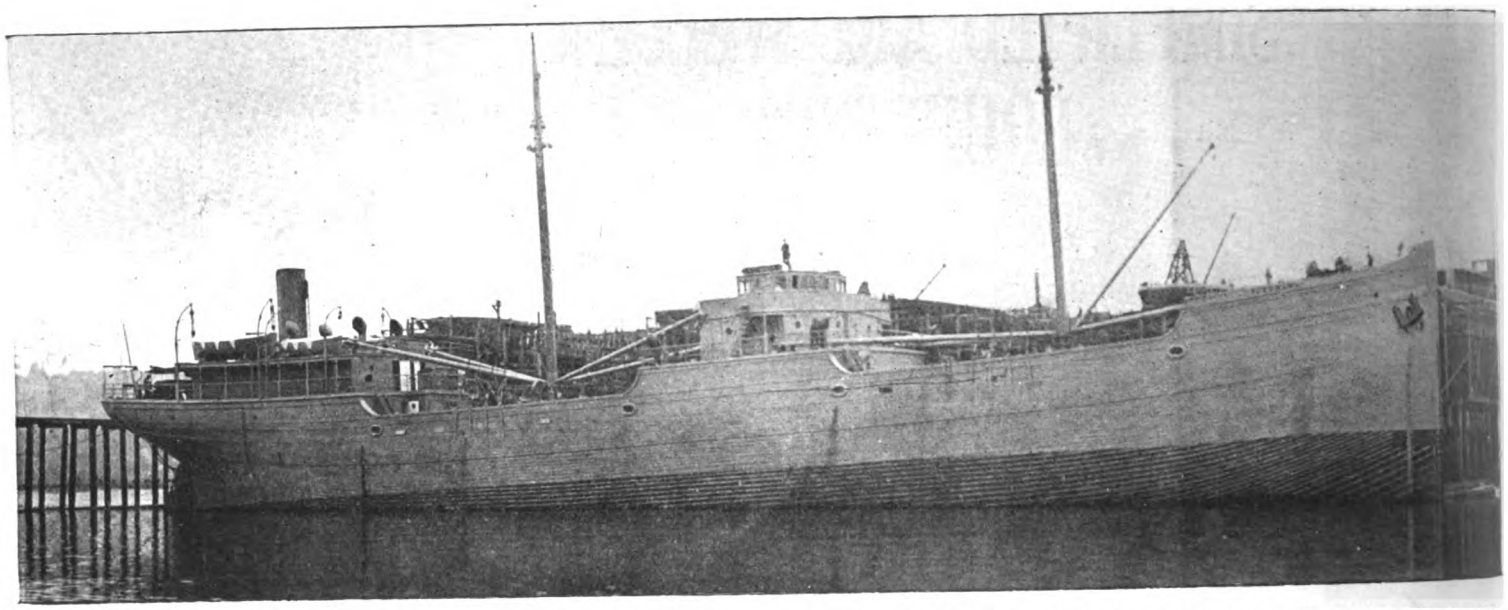
McINTOSH

McIntosh & Seymour Marine Diesel-Engines are the result of eighteen years' Stationary and Marine-Diesel engine experience and thirty years' experience in building the largest and highest grade of steam engines.

STANDARDIZED SIZES

300 b.h.p. - - 1200 b.h.p.
500 b.h.p. - - 1350 b.h.p.
750 b.h.p. - - per Shaft



The Twin-screw McIntosh & Seymour Diesel-engined Motorship "Cethana," owned by the Australian Government and fitted with two 500 b.h.p. engines.

On her trials the motorship "Cethana," a wooden vessel of 2,300 tons displacement (light) averaged 10.35 knots, with the engines averaging 183 R.P.M., on a fuel-consumption of only 0.420 lb. per b.h.p. hour of "Calol" fuel-oil containing 25% asphaltum.

McINTOSH & SEYMOUR CORP'N.

DIESEL MARINE

ALSO STATIONARY

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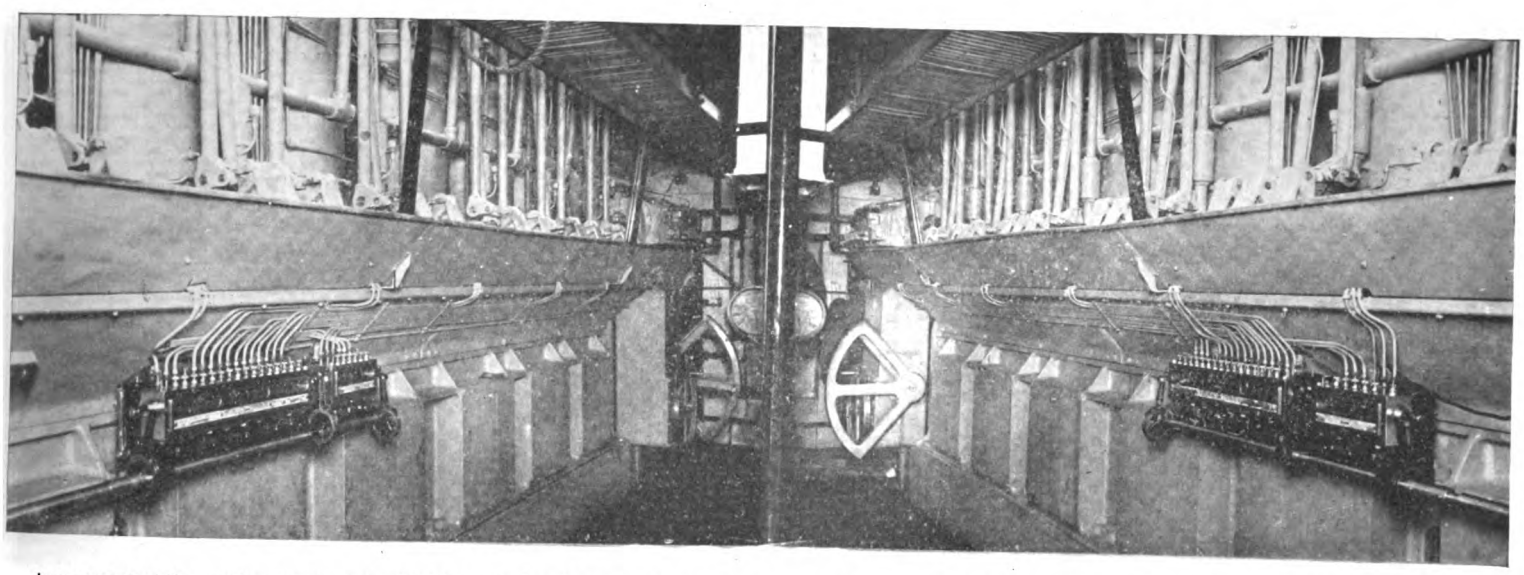
& SEYMOUR

ALL SIX-CYLINDER
DIRECT-REVERSIBLE
FOUR-STROKE CYCLE
SINGLE-ACTING MODELS

McIntosh & Seymour Marine-Diesel Type engines are built in the largest and most completely equipped engineering plant in this country devoted exclusively to the building of Diesel-Type Oil Engines.



Lower part of the engine-room of the "Cethana," showing simple control system of her two 500 b.h.p. McIntosh & Seymour reversible Diesel engines

The success of the McIntosh & Seymour Diesel engines in the Australian Government's motorship "Cethana" should cause all ship owners to make the deepest investigation into the merits of this marine engine. Let us demonstrate to you the advantages of our design.

AUBURN, NEW YORK, U. S. A.

TYPE ENGINES

DIESEL-TYPE ENGINES

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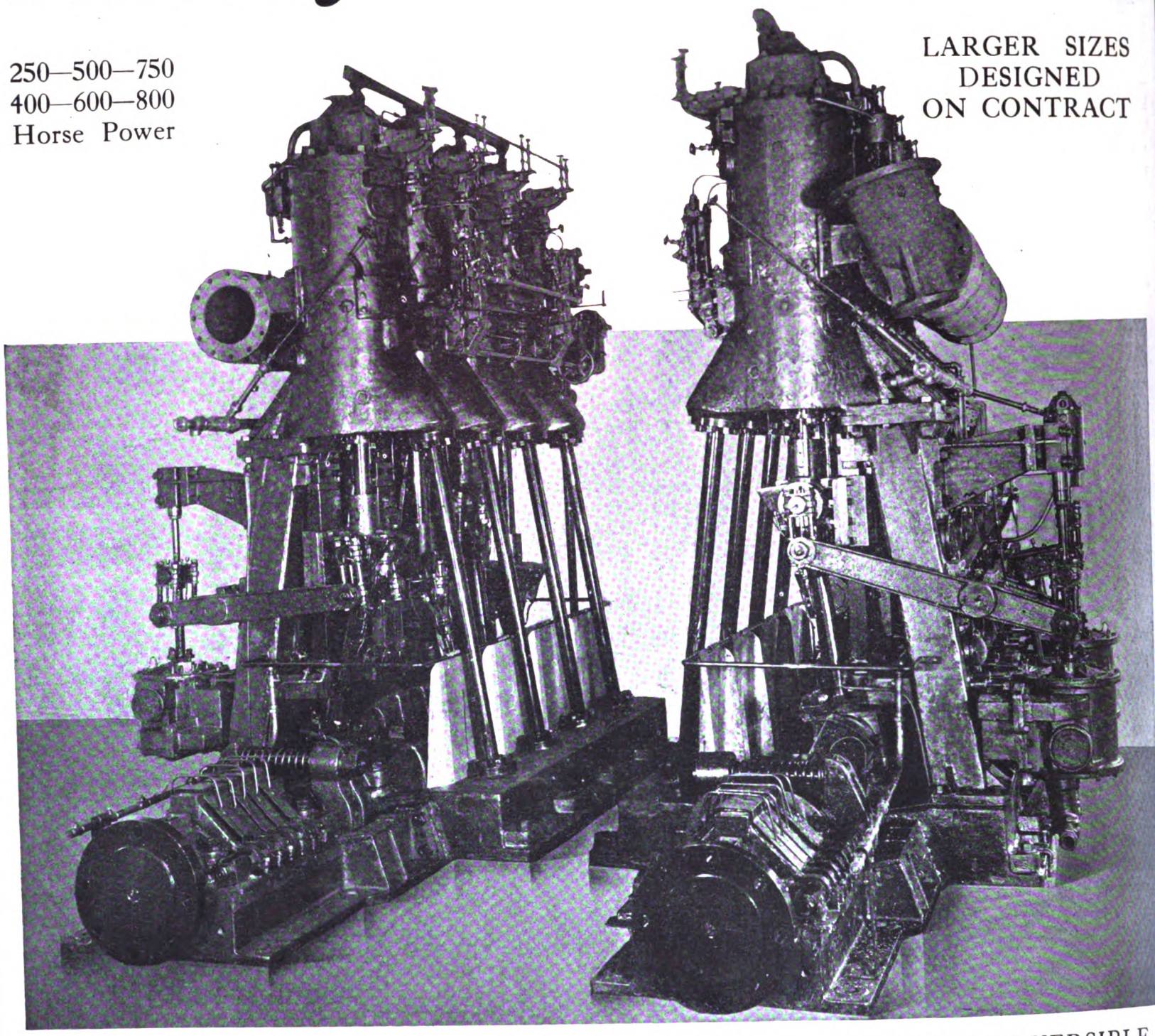
Sumner Marine Heavy Oil Engines

250—500—750
400—600—800
Horse Power

LARGER SIZES
DESIGNED
ON CONTRACT



LOW FUEL CONSUMPTION
EASILY OPERATED

DIRECT REVERSIBLE
4, 6 and 8 CYLINDERS

QUICK DELIVERIES

H. W. SUMNER COMPANY

L. C. SMITH BUILDING

H. W. SUMNER — *Seattle, U.S.A.* — ALBERT E. PARKER

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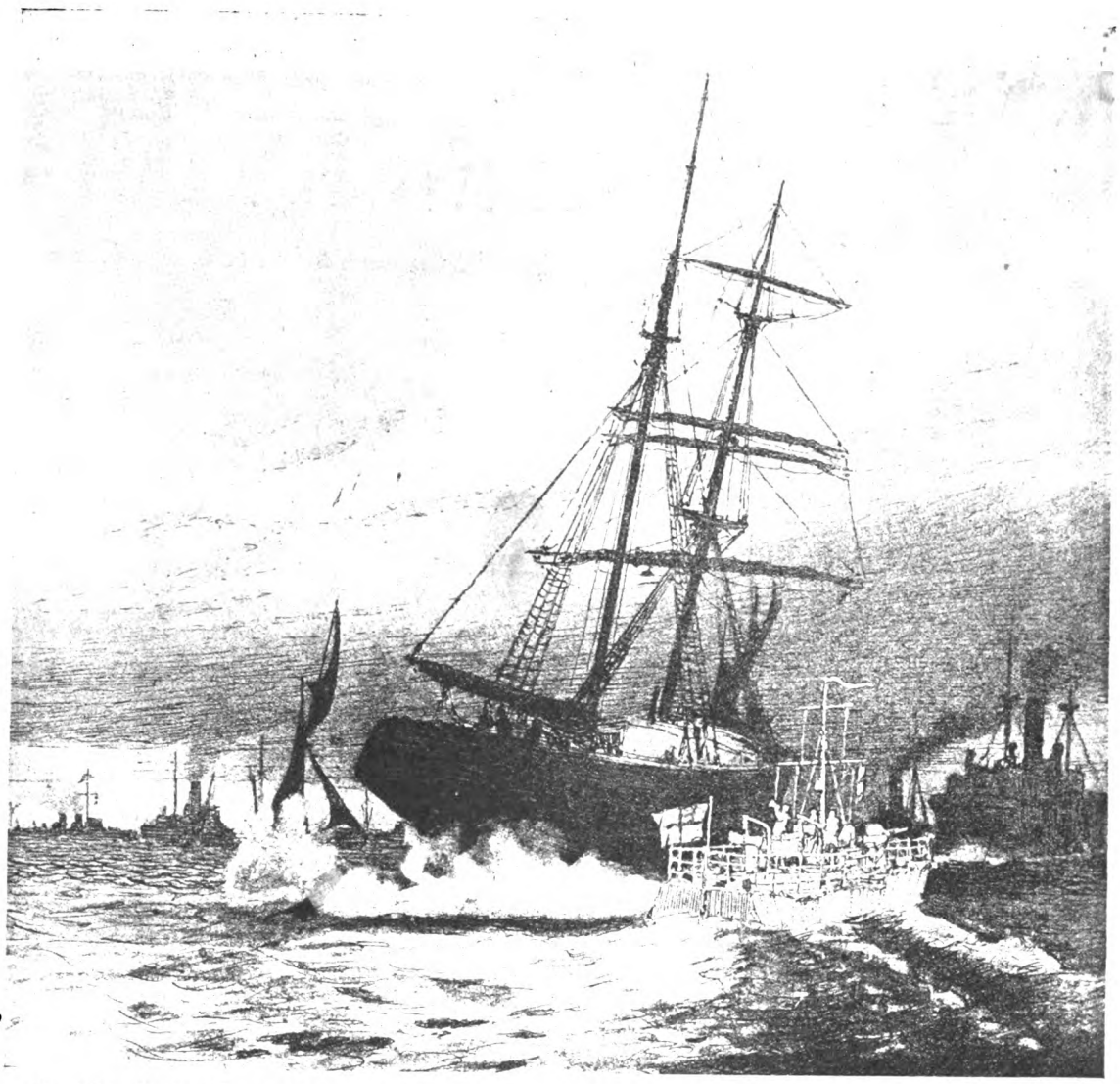

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'THE KING'S HIGHWAY—A PATROL-BOAT ON DUTY IN THE BUSY WATERS OF THE NORTH SEA"—*The Graphic*

A most important *every day* duty—guarding the Allies daily bread.

The British, French, Italian and U. S. A., mosquito craft are respected by every merchantman making Allied ports today.

THE STANDARD ENGINE

keeps these boats to sea, gives them their staying qualities, their cruising range, their speed. We shall be glad to send data.

Back of the Standard guarantee is the

STANDARD MOTOR CONSTRUCTION CO.
Pine Street Jersey City, N. J.

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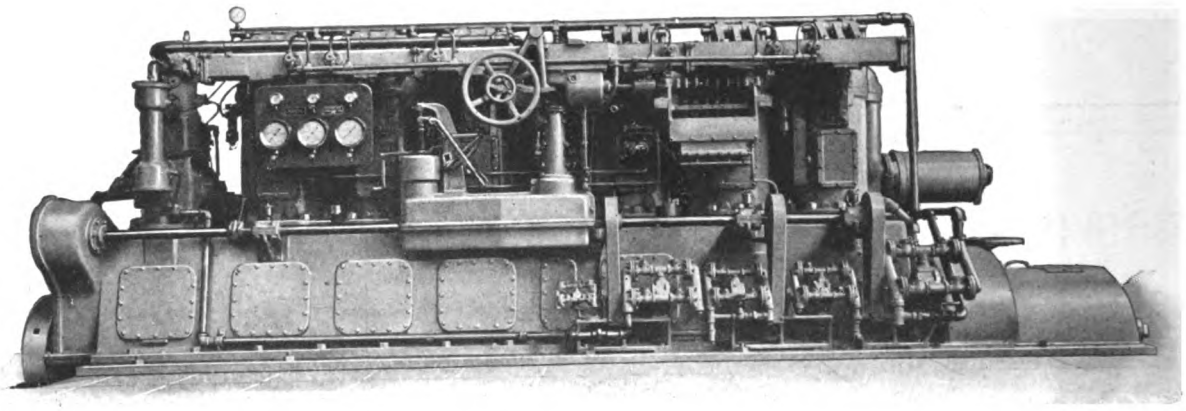
WINTON
DIESEL OIL ENGINES
for MARINE SERVICE



OPERATING SIDE OF A WINTON MARINE OIL ENGINE

Hong Kong, May 3d.

Mr. Starrett:

Dear Sir:-

Arrived here yesterday. Were 146 hours making the run from Shanghai, about 1000 miles. Had no stops, no engine troubles and no repairs to do here. If our luck stays with us, we ought to be back by the first of July.

I made a test run on fuel oil on the way down, and they burn 8.1 gals. per hour at 175 R. P. M. We use less than ½ gal. of lubricating oil per hour.

I consider that pretty good for an engine of that size.

Sincerely,

(Signed) C. W. Newton, Chief Engineer

WE ARE OFFERING DELIVERY ON 200 TO 500 HP SIZES

Winton Engine Works, Cleveland, Ohio, U.S.A.

Seattle Representative - - **H. W. STARRETT, SUNSET ENGINE COMPANY**

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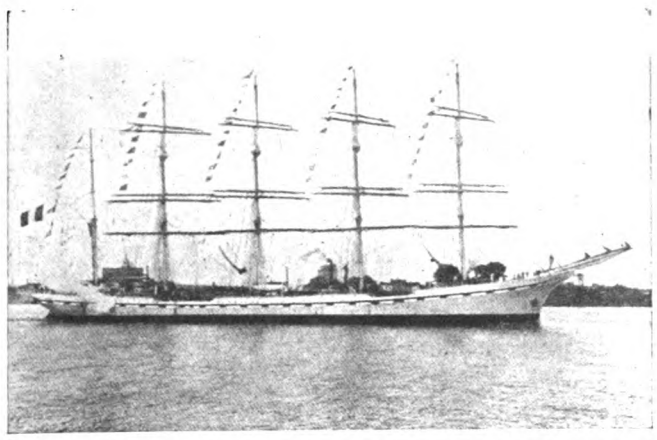
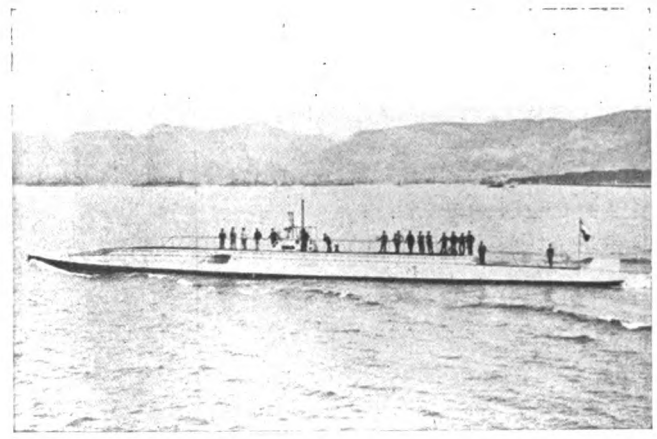


"LA FRANCE," FITTED WITH TWO 900 B. H. P. SCHNEIDER-DIESEL MARINE ENGINES

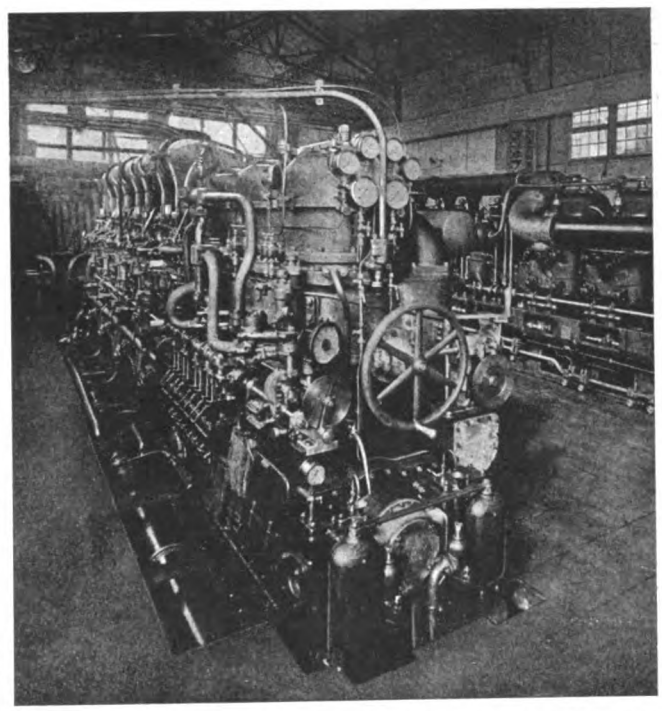


A LARGE SUBMARINE BUILT AND DIESEL-ENGINED BY SCHNEIDER & CIE.

POWERS PER ENGINE

700
1500
and
2400
H. P.

For ONE Motor
(Submarine Type)



A SCHNEIDER 1500 H. P. DIESEL MARINE ENGINE FOR SUBMARINES

LIGHT WEIGHT
(Only 46 lbs. per B. H. P.)

STRONGLY BUILT

EFFICIENCY
(0.400 lb. of Fuel Oil per B. H. P.)

Two and Four-Cycle Diesel Engines for War and Merchant Ships

SCHNEIDER & CIE

HEAD OFFICE AND GENERAL MANAGEMENT
42 RUE D'ANJOU, PARIS (8E)
FRANCE

NEW YORK OFFICE
21 E. 40th Street

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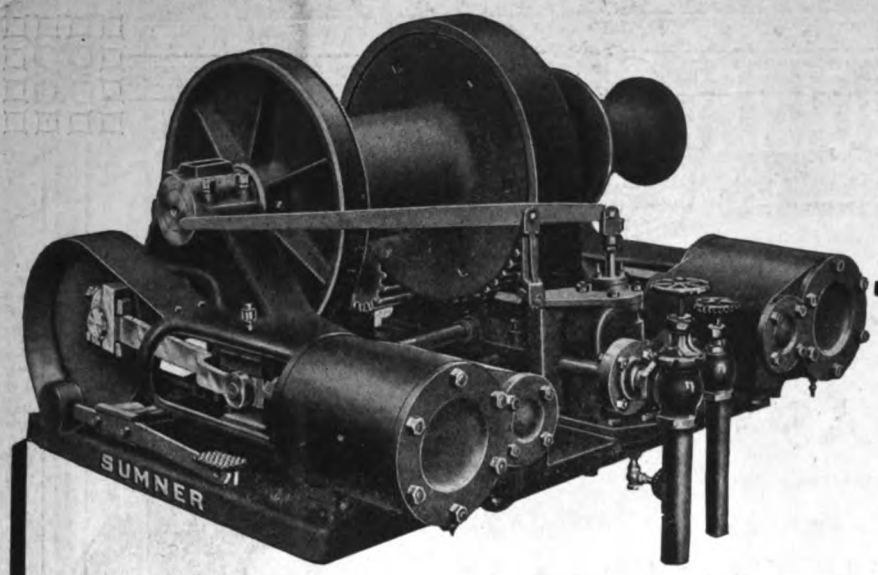


Model No. H32

Write us for Complete Description with Weights and Prices

SUMNER IRON WORKS

EVERETT, WASH., U. S. A.

Sumner Steam Cargo Hoist

A New Model

CYLINDERS—8"x10"; steam pipe 2"; exhaust pipe 2½"; self-draining piston valves.

MANIFOLD FOR STEAM AND EXHAUST—Is lowest part of cylinders and valves, thereby draining all condensation from exhaust.

WITH BALANCED THROTTLE VALVE—Securely bolted. Lever in any position desired.

MAIN SHAFT—Forged Steel, 4 3/16" in diameter.

EXTENDED BOX—With 13" bearing, supporting main shaft the entire distance between main gear and gypsy head.

IF NOT RIGHT WRITE WE WILL MAKE RIGHT

The "Roamer"

FAIRBANKS-MORSE "C-O" MARINE OIL ENGINES

30 to 200 H.P.

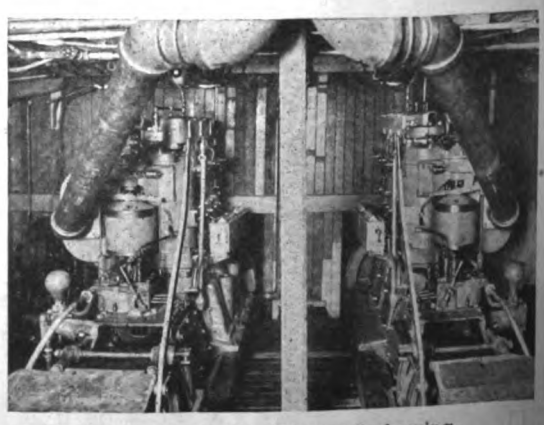
Operating with great success on many widely divergent types of power boats, auxiliaries and work vessels. *Economical* because they give *unfailing power from low priced fuel oils*

FLEXIBLE POWER

Perfect regulation under light, heavy, or intermittent load. Medium compression. Positive ample lubrication. 30 to 100 H.P. with specially designed reverse gears. 150 to 200 H.P direct reversible

FAIRBANKS, MORSE & CO.

Chicago New York Portland San Francisco Seattle



Engine room of the "Roamer" showing two 45 H.P. "C-O" engines installed

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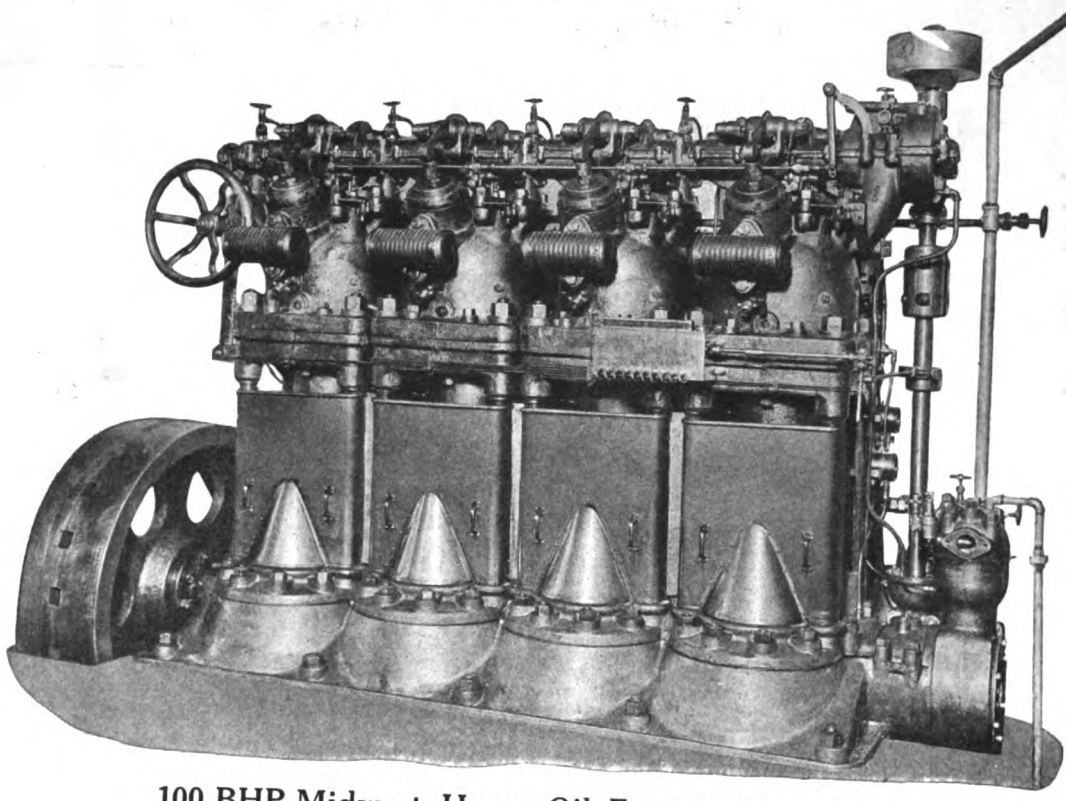
MIDWEST ENGINE COMPANY

SUCCESSORS
TO
LYONS ATLAS COMPANY
Indianapolis, Indiana
AND
HILL PUMP COMPANY
Anderson, Indiana



100 BHP Midwest Heavy-Oil Engine, Type VDV

FOUR-CYCLE
25, 50, 75 and 100 BHP Sizes 1, 2, 3 and 4 Cylinders

Ideal Power for Small Commercial Craft and for Marine Auxiliaries

Ignition Solely by the Heat of Compression, without Air-injection, Magneto, Spark-Plug, Electric-System, Hot-Bulb, Tube, Ball, Plate, or other Heated Metallic Surface

No Carburetor or High Pressure Air Compressor

ALSO BUILDERS OF
MIDWEST and WERK-SPOOR
MARINE DIFSEL ENGINES

INDIANAPOLIS, INDIANA, U.S.A.

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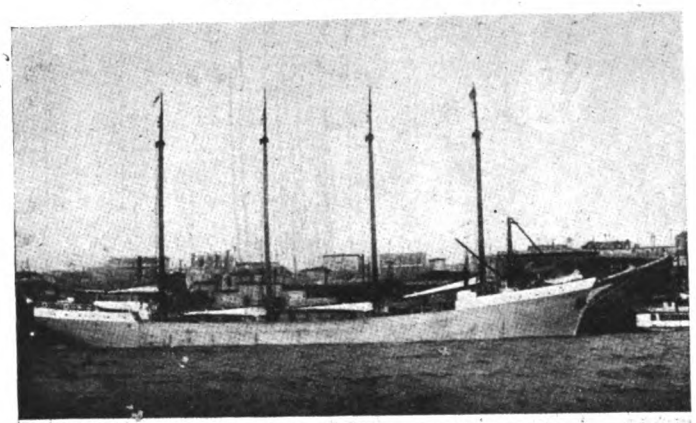
SKANDIA OIL ENGINES

Make Compact Installations

(Marine and Stationary)

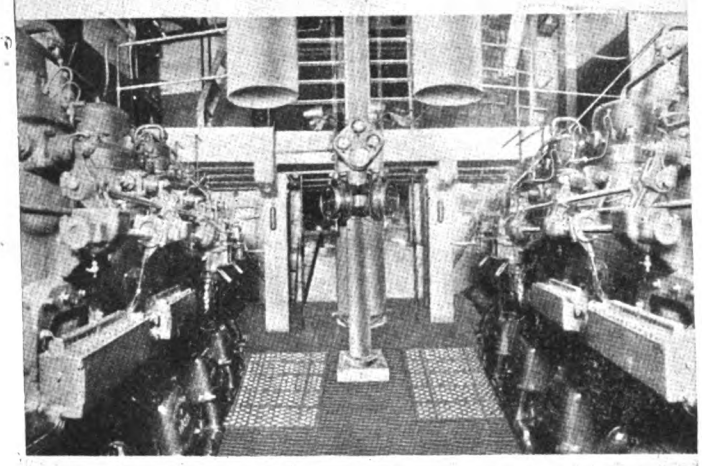
Operate on Low Gravity, Crude or Fuel Oils



Motor Ship "Barlenus," equipped with two 250 Horsepower Skandia Direct Reversible Engines

550,000 B.H.P. Now in Use and on Order

5 B.H.P. to 500 B.H.P.



Interior Engine Room Motor Ship "Barlenus"

5 B.H.P. to 500 B.H.P.

SKANDIA PACIFIC OIL ENGINE COMPANY

WORKS: OAKLAND, CALIFORNIA, U. S. A.

Northwestern Agents SKANDIA ENGINEERING CO.
101 Grand Trunk Dock, Seattle, Wash.

Eastern Agents H. S. JOHANNSEN
50 Church St., New York, N. Y

SKANDIA MARINE OIL ENGINES

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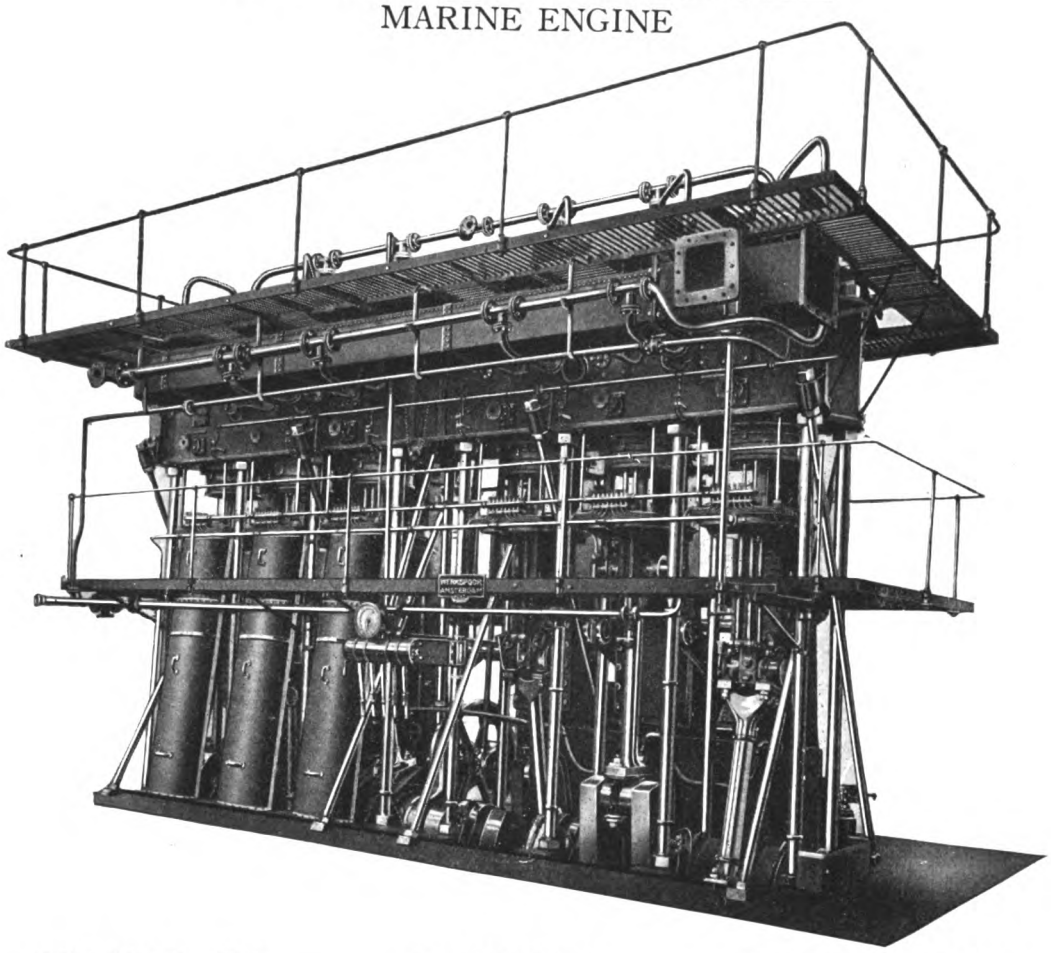
SKANDIA PACIFIC OIL ENGINE COMPANY

BUILDERS UNDER LICENSE OF THE

WERKSPOOR-DIESEL

MARINE ENGINE



RELIABILITY ECONOMY ACCESSIBILITY

Northwestern Agents
SKANDIA
ENGINEERING CO.
101 Grand Trunk Dock
Seattle, Washington

SKANDIA-PACIFIC OIL ENGINE CO.
Balboa Building, San Francisco, Cal.
Works: Oakland, Cal.

Eastern Agents
H. S. JOHANNSEN
50 Church Street
New York, N. Y.

WERKSPOOR MARINE ENGINES DIESEL

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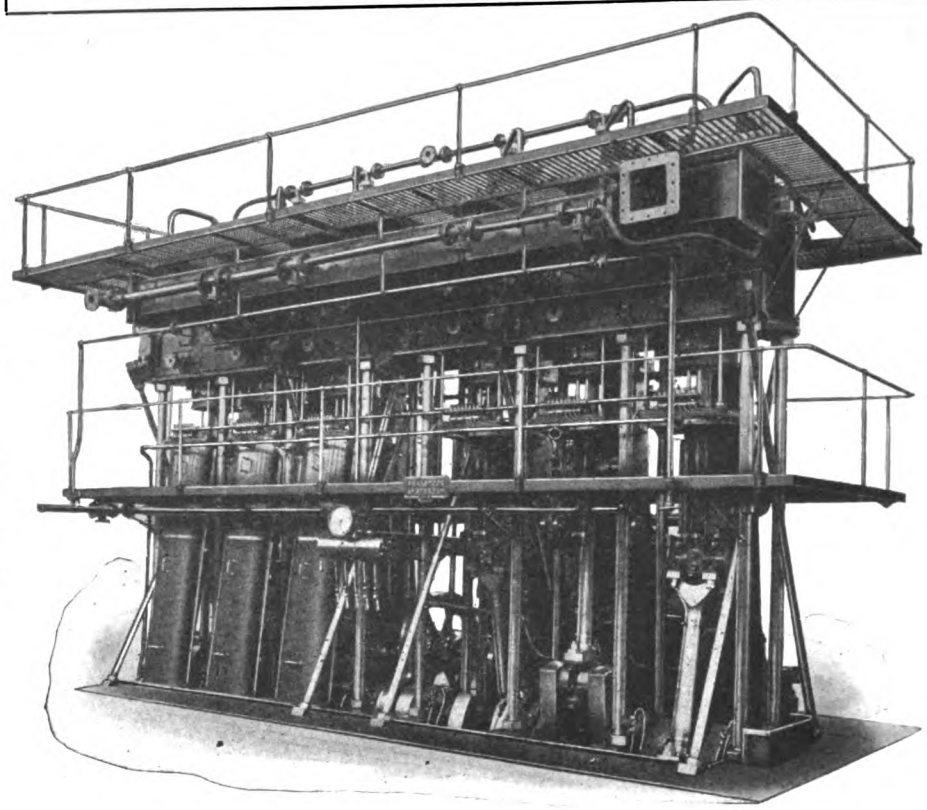
AMSTERDAM WERKSPOOR HOLLAND

THE SUPEREMINENT ATTAINMENT OF MARINE OIL-ENGINE DESIGN

U. S. A. Licensees

MIDWEST ENGINE COMPANY
Successors to
LYONS-ATLAS CO., INDIANAPOLIS, IND.

SKANDIA - PACIFIC OIL ENGINE CO., SAN FRANCISCO, CAL.



U. S. A. Licensees

NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

NEWPORT NEWS SHIPBUILDING & DRY DOCK CO., NEWPORT NEWS, VA.

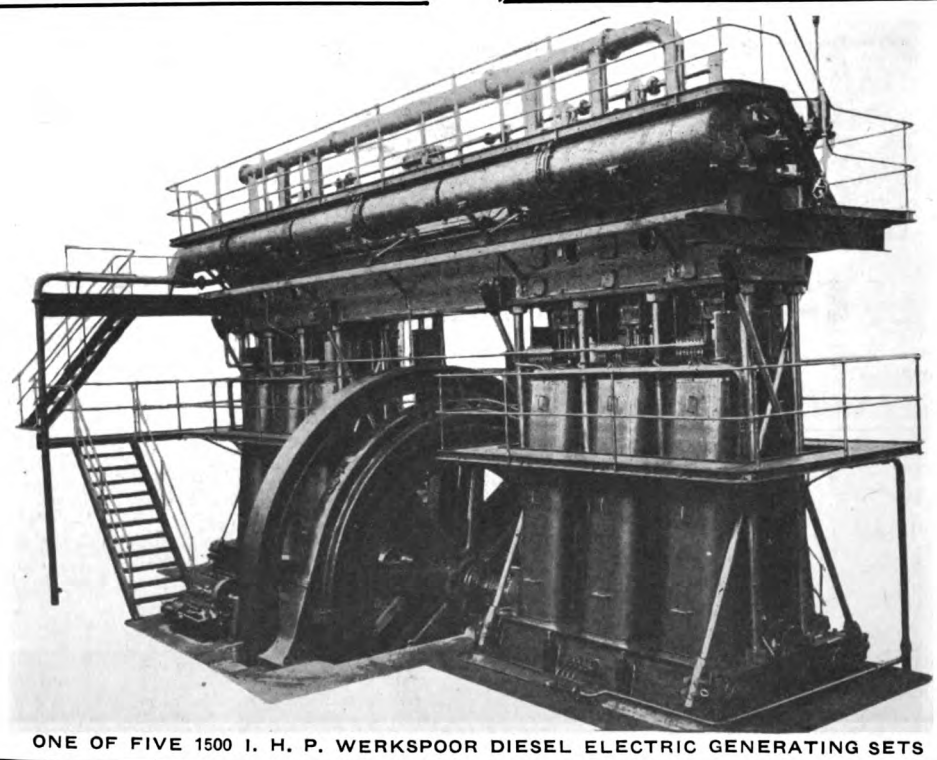
THE WERKSPOOR FOUR-CYCLE TYPE DIESEL MARINE ENGINE

Werkspoor Have Built or Are Building

48 Diesel **Marine**	Engines = 36,800	b. h. p.
76 Diesel **Auxiliary**	Engines = 2,605	b. h. p.
261 Diesel **Stationary**	Engines = 32,816	b. h. p.
Total, **385** Diesel-type	Engines = **72,221**	**b. h. p.**

No Further Marine Licenses Are Available
Four Stationary Constructional Licenses Can Now Be Obtained

ACCESSIBILITY



RELIABILITY

ONE OF FIVE 1500 I. H. P. WERKSPOOR DIESEL ELECTRIC GENERATING SETS

Builders of the FIRST full-powered ocean-going DIESEL Motorship

DIESEL MARINE TYPE ENGINES

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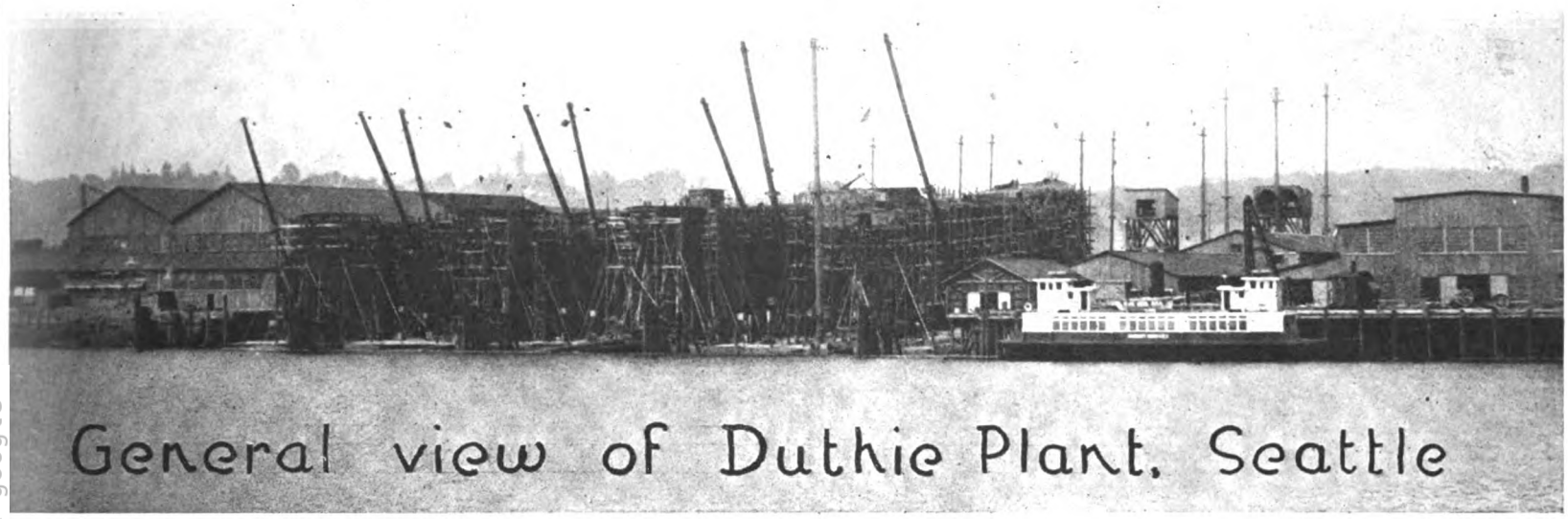
J. F. DUTHIE & CO.

SHIPBUILDERS and ENGINEERS

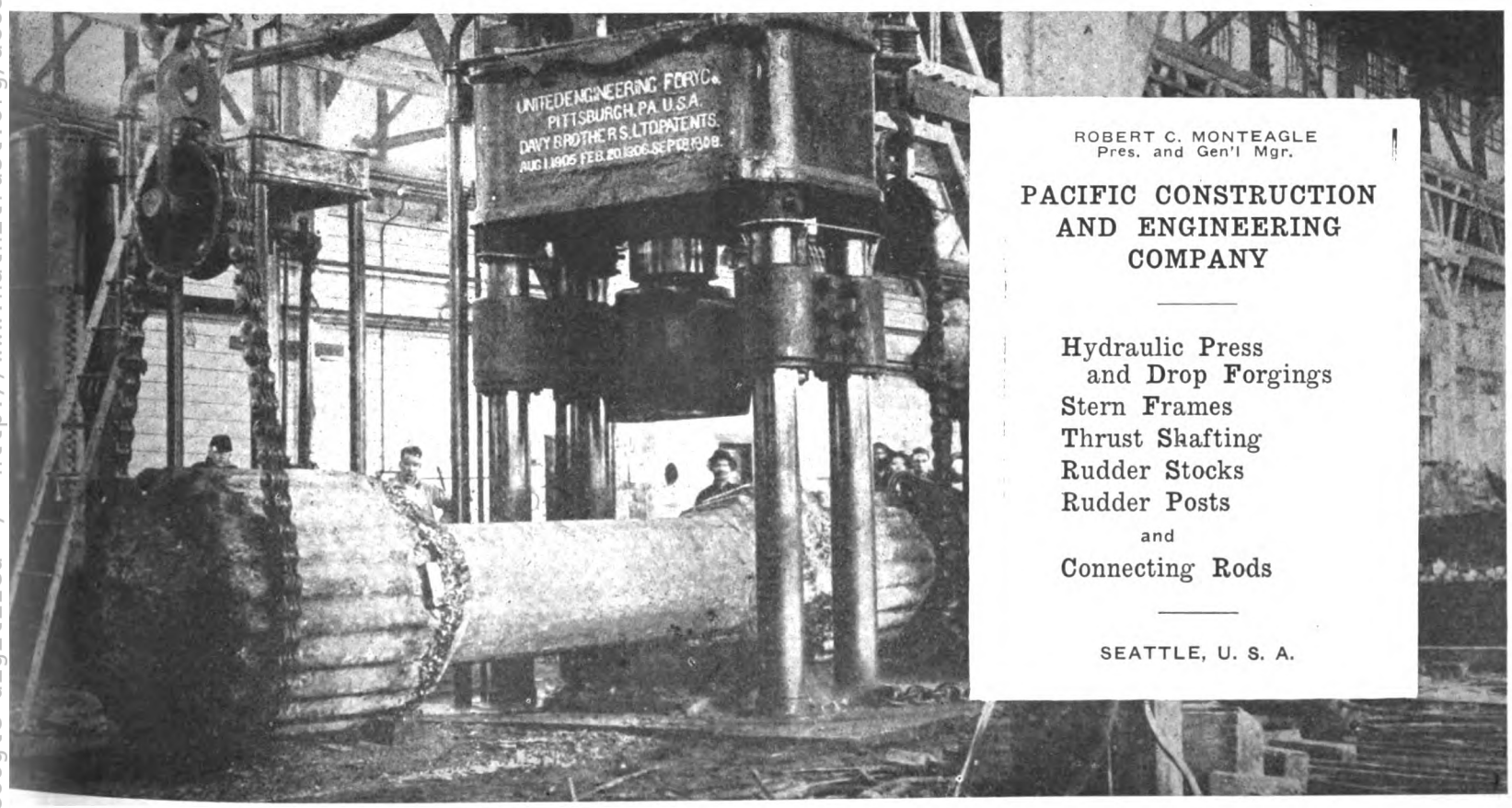
Builders of Steel Steamships

BUILDERS OF DIESEL ENGINED FERRY ROBERT BRIDGES

Kitsap Avenue, East Waterway **Seattle, Wash.**



General view of Duthie Plant, Seattle



ROBERT C. MONTEAGLE
Pres. and Gen'l Mgr.

PACIFIC CONSTRUCTION AND ENGINEERING COMPANY

Hydraulic Press
and Drop Forgings
Stern Frames
Thrust Shafting
Rudder Stocks
Rudder Posts
and
Connecting Rods

SEATTLE, U. S. A.

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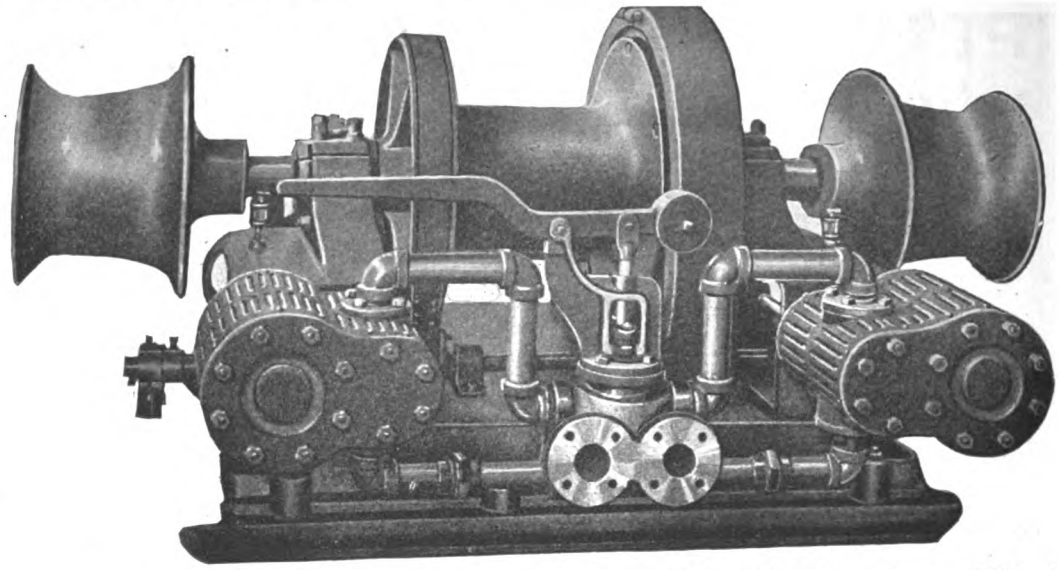
THE VULCAN MANUFACTURING CO.

Successors to THE VULCAN IRON WORKS

ENGINEERS AND MANUFACTURERS



Rear View of Our 8″ x 10″ Vulcan Standard Link Motion Cargo Winch

Built on the same system as our Steam Reverse Valve Winch with interchangeable parts throughout. Lifting capacity 5,000 to 6,000 pounds on a single line with 100 pounds steam pressure. Shipping weight 6,000 pounds

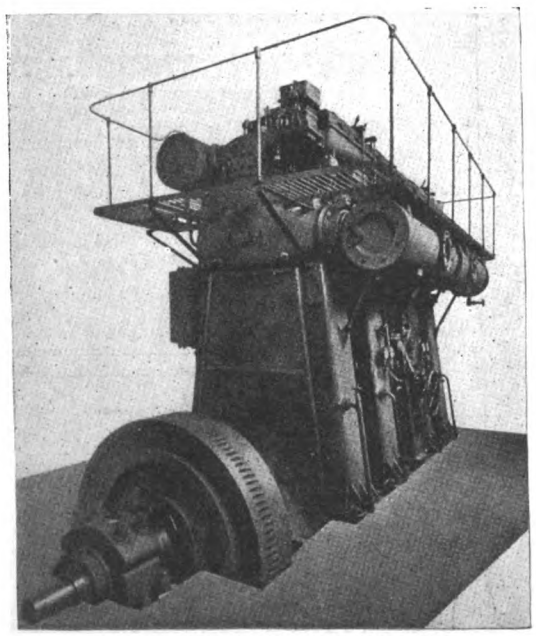
Manufacturers of Windlasses and Deck Machinery

FOUNDERS, PATTERN MAKERS, FORGERS, MACHINISTS, STRUCTURAL STEEL FABRICATORS

SEATTLE, U. S. A.

MOTORSHIP 19

FRANCO TOSI
MARINE
DIESEL ENGINES



500 B. H. P DIRECT-REVERSIBLE TOSI DIESEL ENGINE OF A TANKSHIP

LEGNANO, ITALY.

NEW YORK OFFICE 82 WALL STREET

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Established 39 Years

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Edited by an Ex-steamship Master, Captain George L. Norton.

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ACME ENGINE

All the refinements - none of the faults

Distinctive Features of ACME ENGINES

PLASTIC BRONZE BEARINGS do not burn out like Babbit and can be taken out and renewed very quickly without dismantling engine.

OVERHEAD VALVES resulting in lower fuel cost, greater power for same bore and stroke in a "T" or "L" head type.

LONGER CONNECTING RODS than will be found on most Heavy Duty Engines, cause less wearing of cylinders and pistons.

BY-PASSES for Circulating Water from cylinders to heads doing away with troublesome and leaky asbestos gaskets frequently used.

LUBRICATION: Mechanical Force Feed and Splash Type.—The system used on practically all automobiles, reduces lubricating oil cost to a small sum compared to other systems.

EXHAUST MANIFOLD: Separate casting supported by studs to cylinder, arranged so that all cylinder heads can be removed without disturbing exhaust piping.

IGNITION: "Make and Break" or "Jump Spark," optional. Acme "Make and Break" igniters are reliable, simple, and can be removed without taking off any other parts of the engine.

PISTON PINS: Stepped, Ground and Case hardened.

CAMS, GEARING, and other working parts run in an oil bath. Practically no wear.

CYLINDERS CAST SEPARATE: Less expensive and much easier to replace than cylinders cast en bloc. Less liable to crack.

TIGHTLY ENCLOSED BASE prevents deadly gas fumes escaping in engine room, also keeps bilges free of dirty oil.

PISTONS REMOVABLE THROUGH THE CRANK CASE: Doing away with necessity of dismantling the engine and re-adjusting the working parts.

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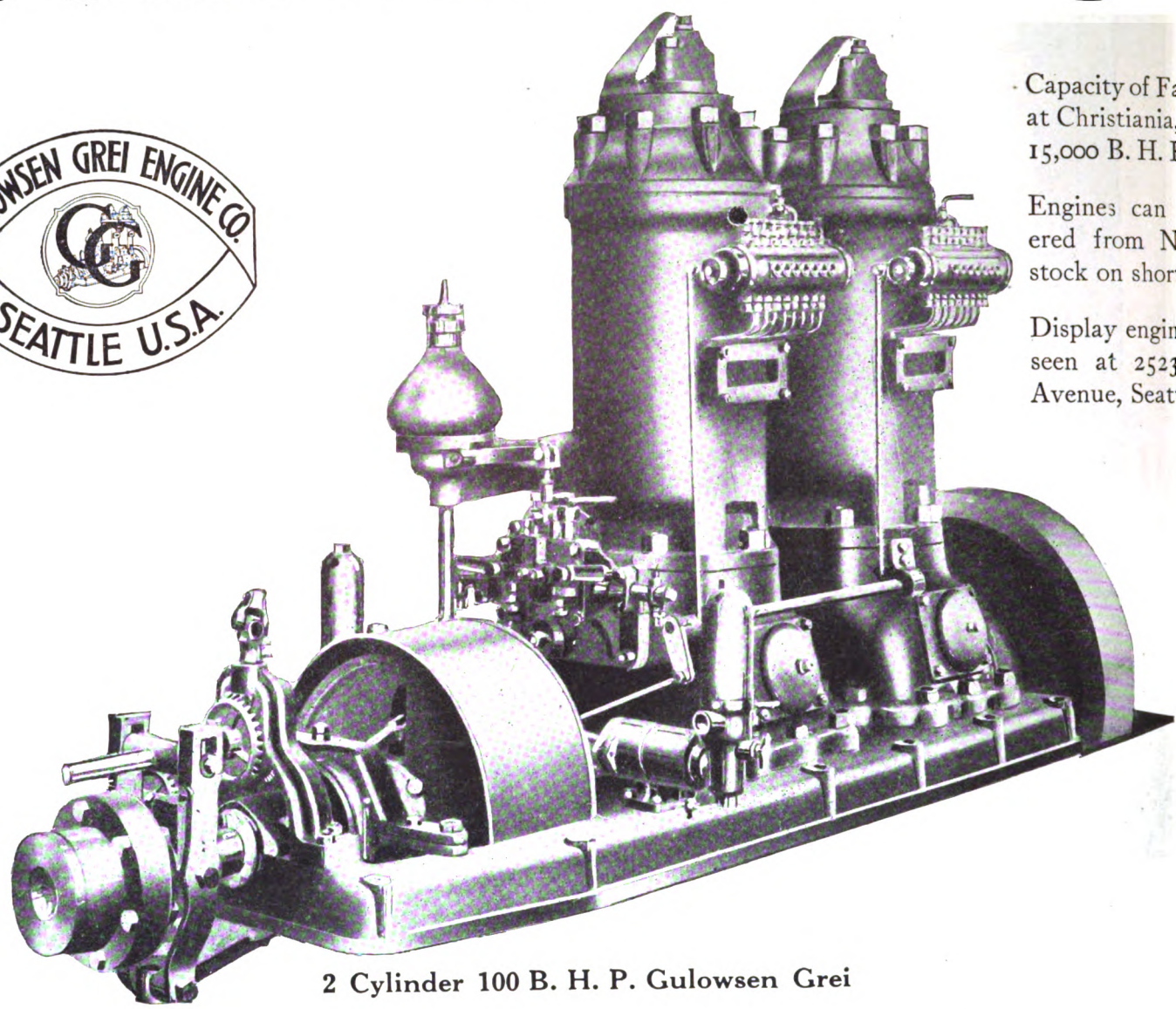

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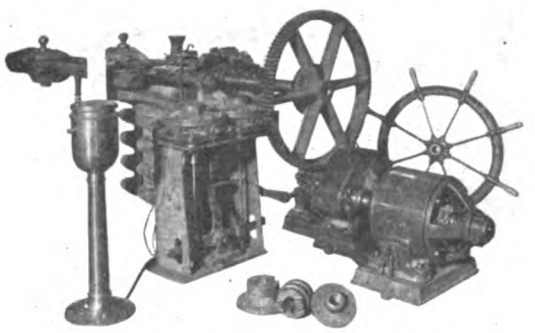

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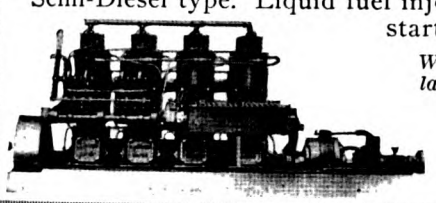

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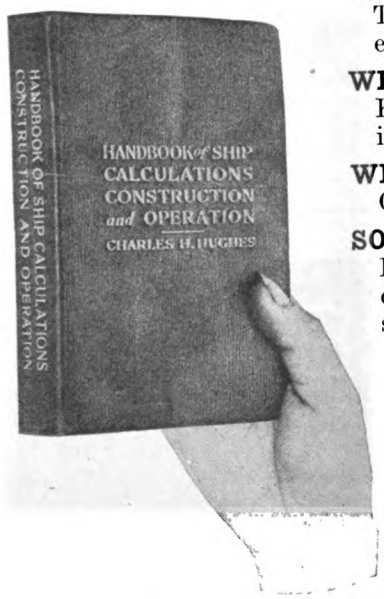

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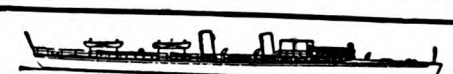

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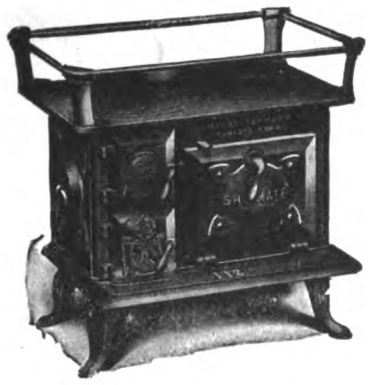

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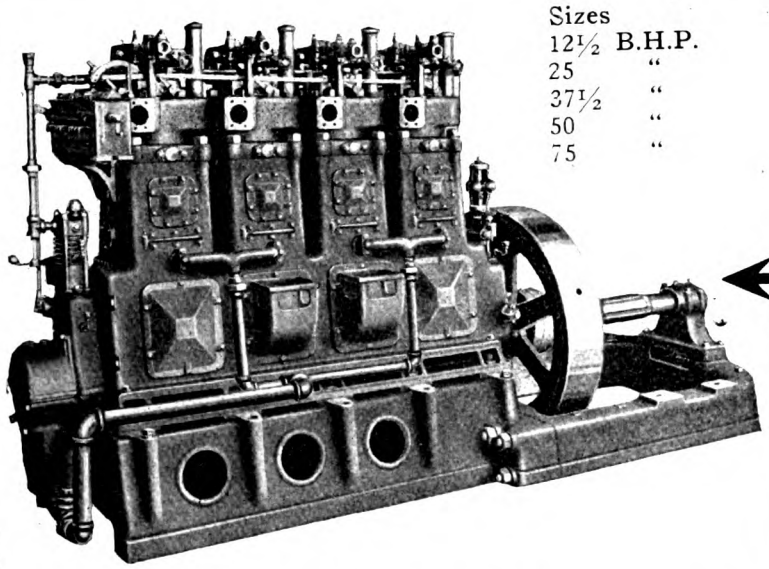

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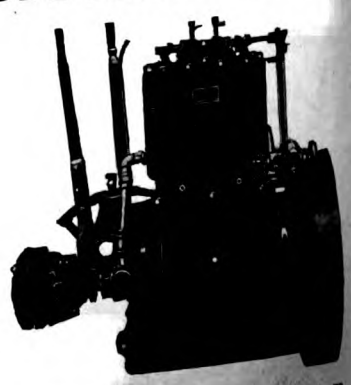

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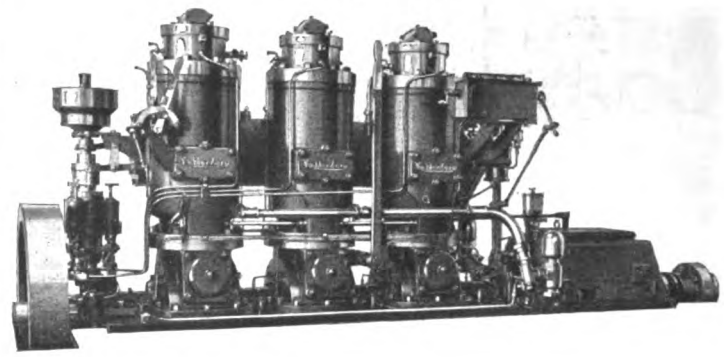

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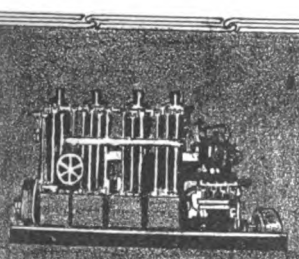

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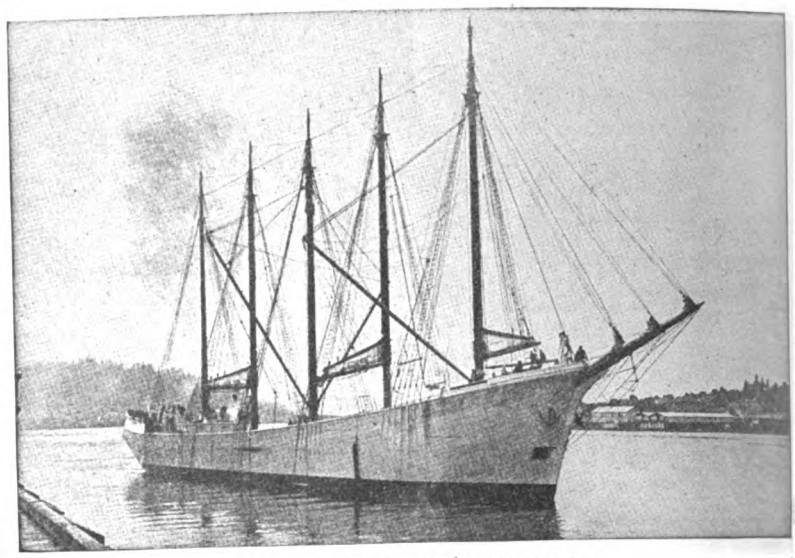

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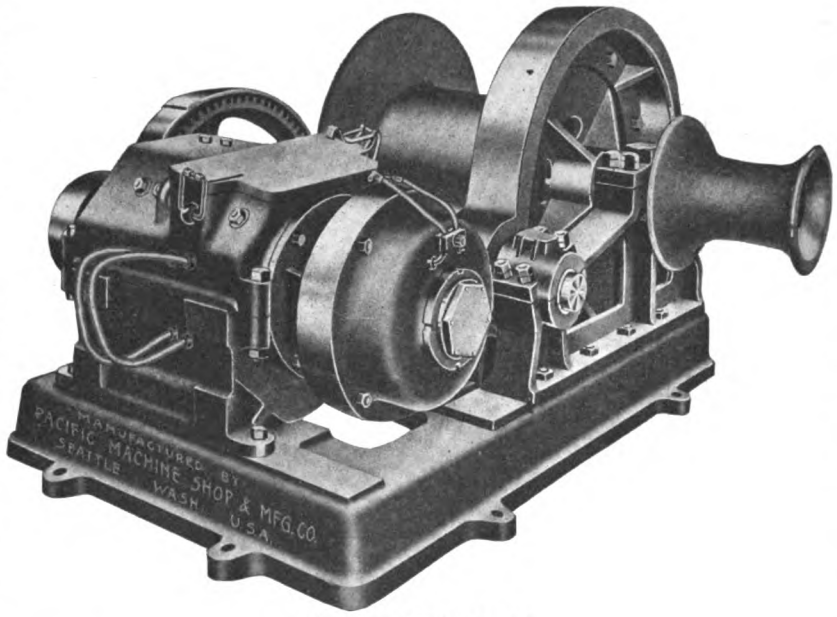

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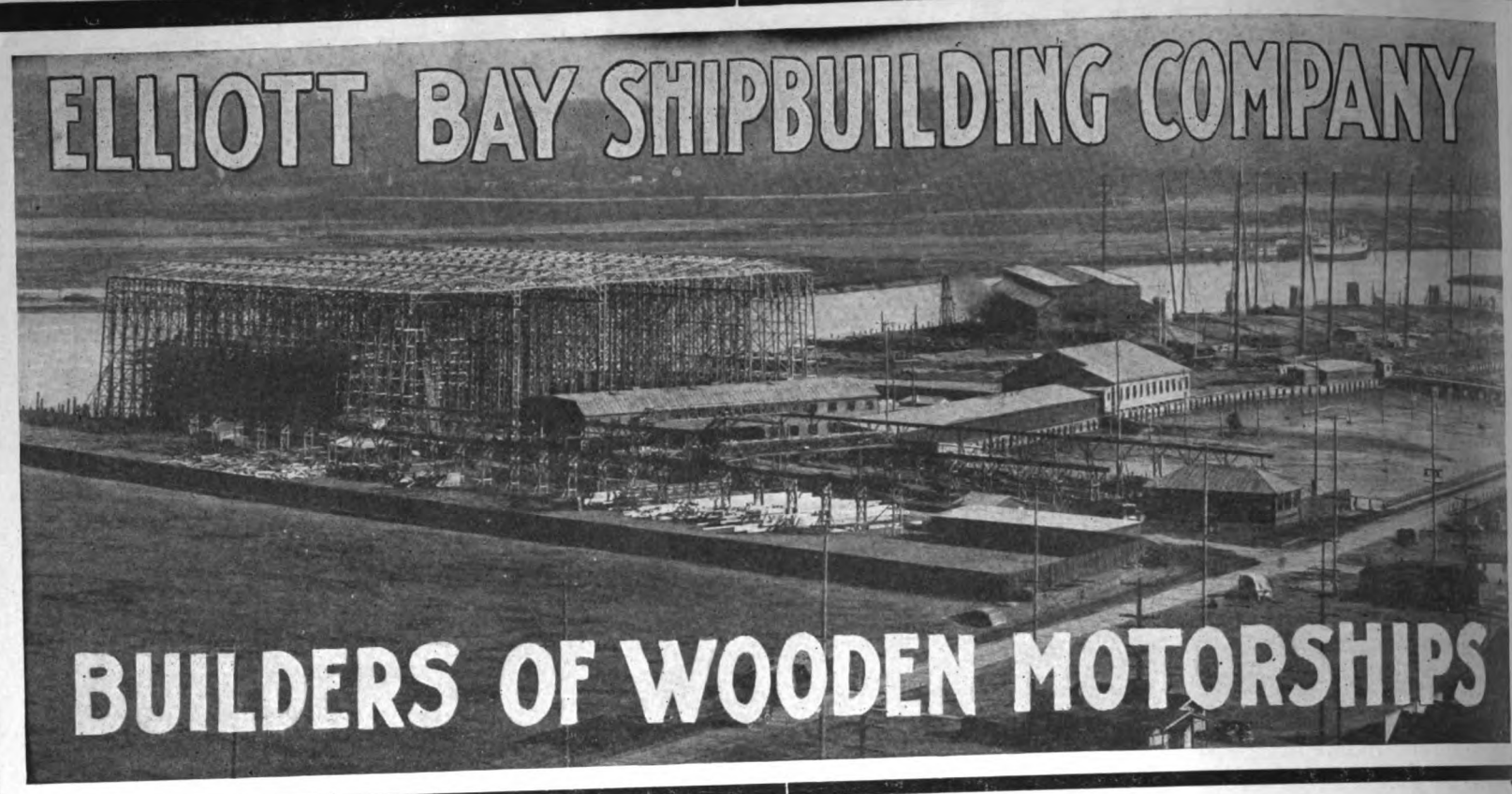

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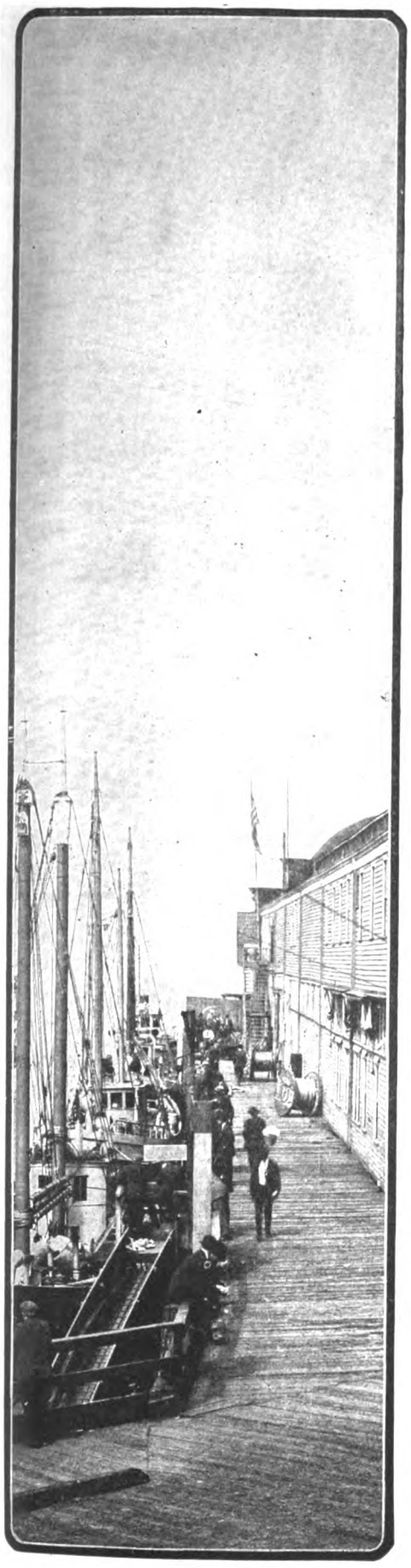
SHIP EQUIPMENT

For Builders and Operators



We Are Supplying Those
Extra High-Grade Brass

SHIPS LIGHTS

That the Shipping Board Specify

RUNNING LIGHTS
ANCHOR LIGHTS
BULKHEAD LIGHTS

And No Ship Is "Class A" Without a

SHIPMATE RANGE

All Sizes For Every Purpose

PLYMOUTH CORDAGE **ANCHOR CHAIN**
BALDT AND PROVIDENCE ANCHORS
SANDS MARINE PLUMBING

In Fact Old Established Lines of Ship Chandlery That You Can Depend Upon

MARINE ENGINES

FRISCO STANDARD—Heavy Duty
FRISBIE—Medium Duty
FERRO—Light Work

We Have an Engine for Every Service

Write for Catalog

Pacific Net & Twine Company

PIER 8, SEATTLE, U. S. A.

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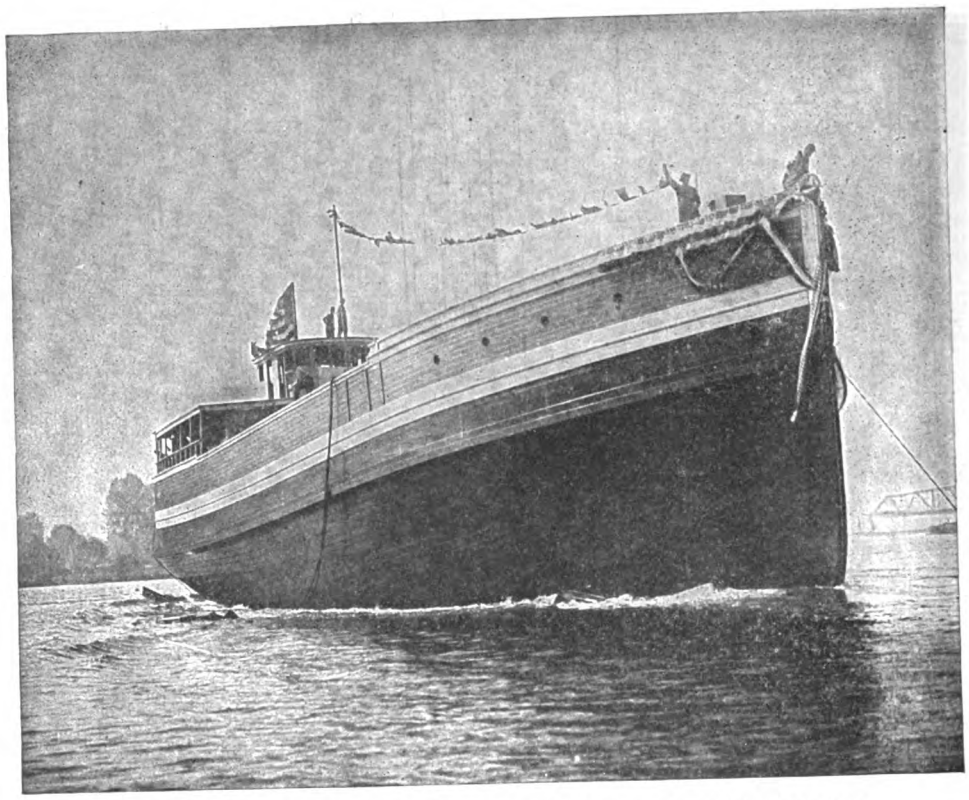
ATLAS FULL DIESEL TYPE ENGINE

SERVICE RELIABILITY POWER

ATLAS-IMPERIAL

DIESEL ENGINES BUILT

IN SIZES
From 110 to 1200 B. H. P.



DISTILLATE ENGINES BUILT

IN SIZES
From 4 to 250 B. H. P.

FREIGHTER "APEX" EQUIPPED WITH 350 H. P. ATLAS DIESEL

Mr. Lee H. Wakefield, the owner of the "Apex" is also the owner of seventeen boats installed with Atlas engines, two of these being Atlas Diesels. Mr. Wakefield selects the Atlas knowing that it is the best engine obtainable and that their service is unequaled.

AN ENGINE NOT AN *EXPERIMENT*

ATLAS-IMPERIAL GAS ENGINE CO.

MAIN OFFICE — OAKLAND, CALIFORNIA — FACTORY

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Aberdeen, Wash.—Gus. Lindberg.
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Portland, Ore.—Bell Oil Co., 14 N. Front St.
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Los Angeles and Vicinity—Fellows & Stewart, Wilmington, Cal.
Stockton, Cal.—Stockton Iron Works.
Sydney, Australia—Atlas Oil Engine Co. 15 Market St.
New Orleans, La.—J. G. Davis, 1324 Music St.
Mexico City—Wm. Young & Co., La Calle de Gante No. 11.
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Honolulu, T. H.—Cotton, Neill & Co.
Vancouver, B. C.—Ferrier and Lucas, 426 Howe St.

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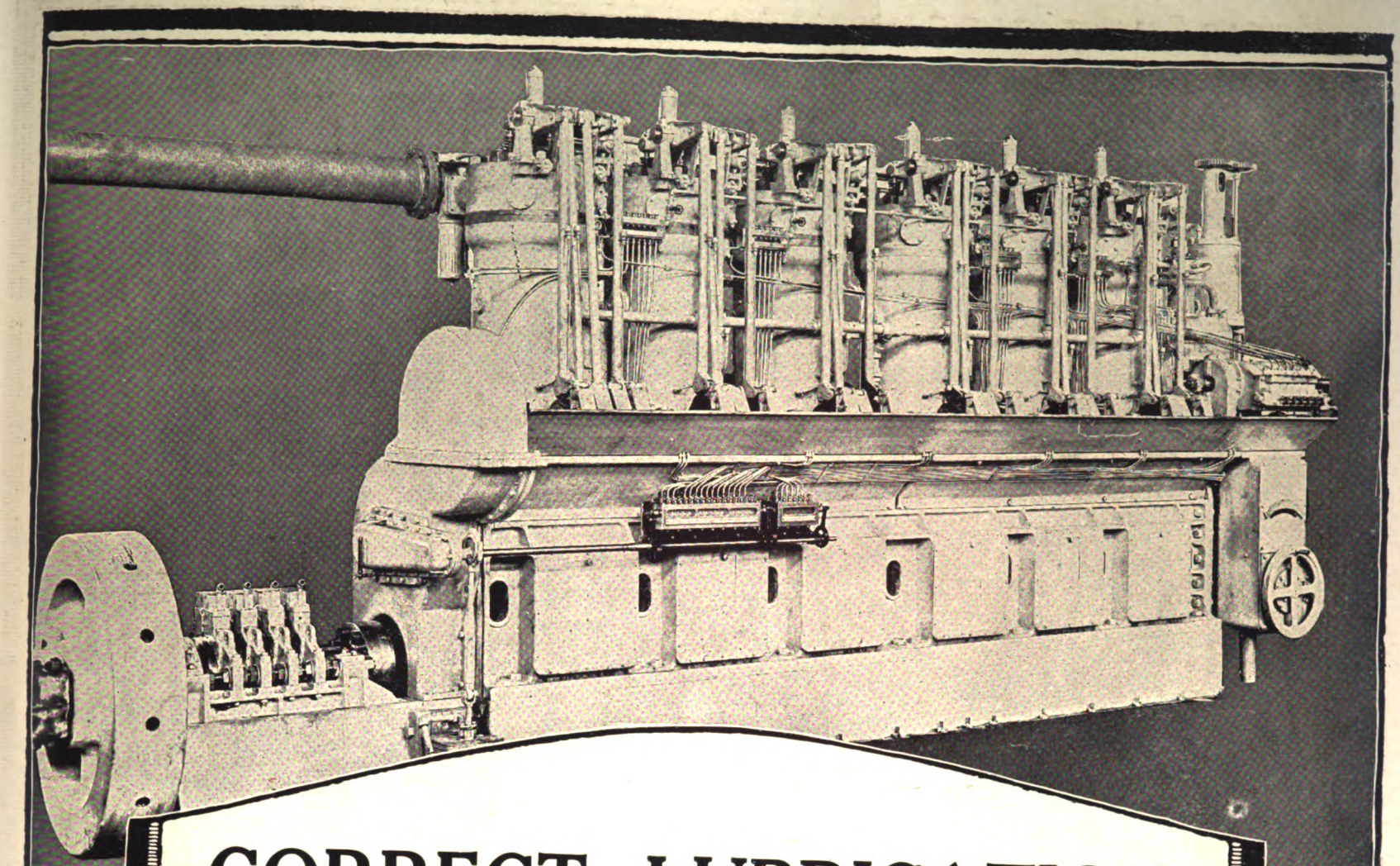

CORRECT LUBRICATION
FOR DIESEL and SEMI-DIESEL ENGINES

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surfac Ignition, Semi-Diesel, or Diesel type —use

CALOL DIESEL ENGINE OIL
OR
CALOL DIESEL ENGINE OIL HEAVY

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service. At points named below and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

CORRECT FUEL FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine l'es in its ability to utilize the heavier forms of Fuel Oil. Fuel Oil for the Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
For Diesel and Semi-Diesel Engines

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-fro[illegible]t at:

RICHMOND, CALIF.
SEATTLE, WASH.
PORTLAND (WILLBRIDGE), ORE.
HONOLULU, T. H.
By barge at:
SEATTLE, WASH.
SAN FRANCISCO, CALIF.

STANDARD OIL COMPANY
(California)

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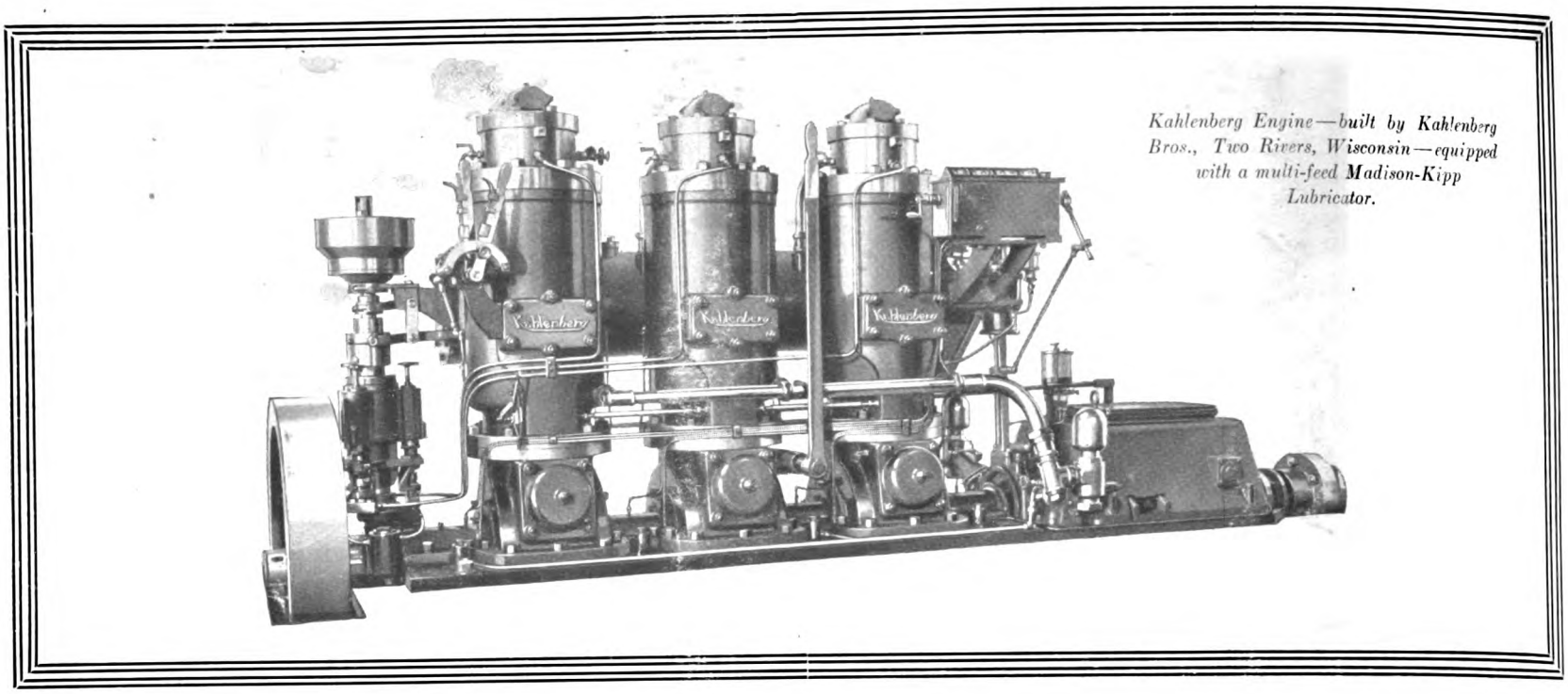

Kahlenberg Engine—built by Kahlenberg Bros., Two Rivers, Wisconsin—equipped with a multi-feed Madison-Kipp Lubricator.

They Save by Using Oil but Once

THE low-grade fuel of Diesel, hot-surface, and other compression-ignition types of motors, pollutes lubricating oil.

In some marine types of such motors, this carbon fouled lubricant is pumped back into the cylinders.

Even if it has been strained, an undue amount of gumming, fouling, and grinding wear are sure to follow.

In consequence more and more marine motor-builders are employing Madison-Kipp Lubricators because they use oil but once.

They Diminish Oil Consumption and Repairs

The feed adjustments of these lubricators can be easily and accurately made.

In consequence both laboratory and service tests show a saving of from 10 to 40 per cent of lubricant.

Far more important is the long life they insure for the motor's wearing parts.

They even insure against accidental lack of lubrication because of the unfailing action of the Kipp valveless principle.

They Maintain Motor Power

The "live" oil principle of the Madison-Kipp insures the maximum compression absolutely essential to heavy duty motors by furnishing a perfect oil-seal.

Used oil, even when thoroughly strained, does *not* make a good oil seal, for much of its lubricating quality has been destroyed by use.

Even more of its value is lost through adulteration with condensed fuel that cannot be strained out.

For All Types of Motors

In cross-head types it may be possible to use the Madison-Kipp for motor lubrication only, relying on strained sump oil for bearings.

In trunk-piston types, the Madison-Kipp "live-oil" system is indispensable for both.

Not only on many types of marine motors but also on two out of every three farm tractors and on steam hammers, dredges and compressors the Madison-Kipp is standard.

We can make immediate deliveries, for our factory is the largest in the world devoted to lubricator manufacture.

The Madison-Kipp Lubricator Co.
MADISON, WISCONSIN

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BOLINDER'S

550,000 B. H. P. of Bolinder's Engines Now in Use in All Parts of the World

M.S. SANTA ISABEL.

Description of voyage #1 - Santa Isabel -
1 Sailed San Francisco Jan 25 - Arrived Seattle Jan 31 -
2 Sailed Seattle Feb 6. Arrived San Francisco Feb 10 -
3 Sailed San Fran. Feb 14. Arrived San Pedro Feb 16 -
4 Sailed San Pedro Feb 27 - Arrived Amapala Mar 12 -
5 Sailed Amapala Mar 14 - Arrived Acajutla Mar 15 -
6 Sailed Acajutla Mar 15 - Arrived Payta March 23 -
7 Sailed Payta Mar 23 - Arrived Talara Bay Mar 24 -
8 Sailed Talara Bay Mar 27 - Arrived Eten March 28 -
9 Sailed Eten March 30 Arrived Salaverry Mar 31
10 Sailed Salaverry Mar 31 - Arrived Samanco April 1 -
11 Sailed Samanco April 1 - Arrived Callao April 2 -
12 Sailed Callao April 4 - Arrived Mollendo April 7 -
13 Sailed Mollendo April 8 - Arrived Arica April 9 -
14 Sailed Arica April 9 - Arrived Iquique April 10 -
15 Sailed Iquique April 11 - Arrived Antofagasta April 12 -
16 Sailed Antofagasta April 13 - Arrived Coquimbo April 16 -
17 Sailed Coquimbo April 16 - Arrived Valparaiso April 18

- Return Voyage via New York -

18 Sailed Valparaiso April 19 - Arrived Antofagasta April 23
19 Sailed Antofagasta April 25 Arrived Arica April 27
20 Sailed Arica April 27 Arrived Balboa C.Z. May 9 -
Entered canal May 10 - Left canal May 10 - 3.30 P.M.
21 Sailed Cristobal May 10 - Arrived New York May 23d

Detentions at sea - none. Detentions in port. At San Pedro, Cal., discharged cargo and dry-docked to repair outboard shaft coupling. Time lost 115 days
Detentions at any port account of repairs to Engines or cargo hoisting machinery. None
Distance covered - 13,850 Miles
Time consumed Four months or 129 days

C B DeBernardi
Chief Engr.

The log pictured herewith is from an average voyage of one of 4 sister motorships all equipped with twin sets, 320 B. H. P. Bolinder Fuel Oil Engines and emphasizes the well-established reputation of the Bolinder Engine.

ENGINED WITH TWIN SET OF 320 B. H. P. "BOLINDER" MARINE FUEL-OIL ENGINES.

Present Sales and Yearly Output 100,000 B.H.P.

Present U. S. A. Bolinder Installations 55,000 B.H.P.

Craft under construction and to be fitted with "BOLINDER" Engines in the United States alone aggregate over 145,000 tons; "BOLINDER" Engines now in service, over 12,500

The BOLINDER

THE ENGINE THAT IS NOT A DIESEL
THE ENGINE THAT IS NOT A SEMI-DIESEL
THE ENGINE THAT IS THE BOLINDER
THE STANDARD FOR SURFACE-IGNITION FUEL OIL ENGINES

An example of the ruggedness of the "BOLINDER" Engine was displayed in the case of the M. S. "ASTRI" recently. This vessel encountered a hurricane off Mazatlan and became severely strained, resulting in the flooding of the engine room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

HENRY LUND & CO., Marine Building San Francisco CALIFORNIA

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For September Delivery

TWO

400 B.H.P. WEISS Engines

Reversible Marine Oil-Engines suitable for Single or Twin installations, developing their rated power at 245 R.P.M.

Embodying the latest improvements worked out by the Dean of Oil Engineers—Carl W. Weiss.

These two engines are subject to delivery F.O.B. Chicago, Ill.

Wire to-day for complete specifications and descriptive matter.

"In 1894 the first practical surface-ignition, medium-compression, two-cycle oil-engine was designed, patented and built by Carl W. Weiss, the father of the modern heavy-oil engine. All other oil-engines of this style are either copies, imitations, or developments of the original Weiss engine. Hence, it is rapidly becoming an accepted usage to describe all surface-ignition, medium-compression oil-engines as of the 'Weiss-Type.'"

In the October issue of this magazine will appear a highly important and interesting announcement in regard to the future plans and output of this organization—look for it!

Weiss Engine Co.

17 BATTERY PLACE, NEW YORK

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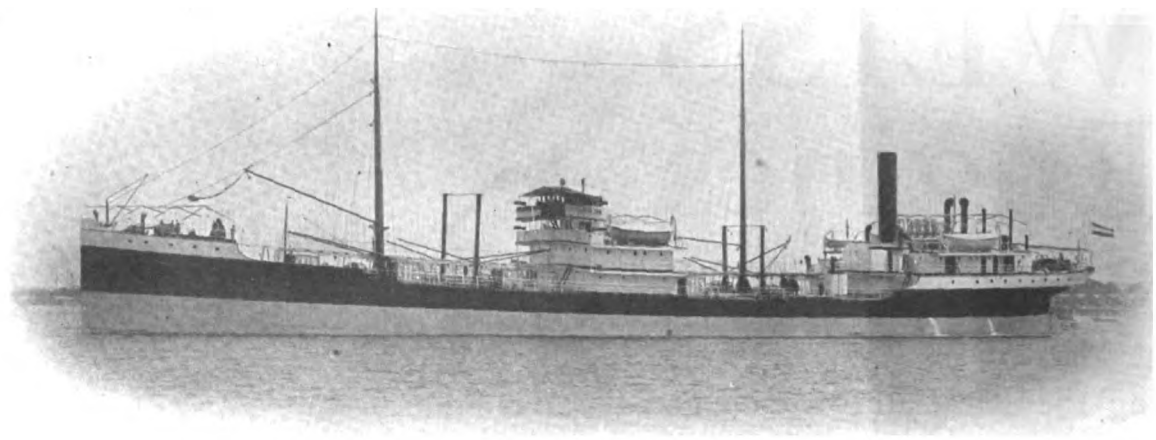
OIL FUEL

THE FUEL OF THE 20th CENTURY



ONE OF OUR FLEET OF OIL-CARRYING MOTORSHIPS

The Asiatic Petroleum Co., Ltd.

ST. HELEN'S COURT, GREAT ST. HELENS, LONDON, E. C., ENGLAND

are prepared to supply OIL FUEL at

Adelaide	Curacoa	Palembang	Port Said	Shanghai
Alexandria	Hong Kong	Panama Canal (both ends) (completed)	Puloe Samboe	Singapore
Balik Pappan	Karachi	Pangkalan Berandan	Rotterdam	Soerabaya
Bangkok	Lisbon (completed)	Penang	Sabang	Suez
Batavia	Madras	Portland, Oregon, S. S. A. (building)	Saitozaki	Sydney
Bombay	Melbourne		San Francisco	Tampico
Calcutta	Montreal		San Pedro	Tarakan
Cape Town	Nagasaki		Seattle, Washington, U. S.A. (building)	Thameshaven
Colombo				Vancouver (building)

Note.—During the war it is not possible to keep stocks at some of the above-named ports. It is therefore advisable for intending buyers to enquire whether stocks are available.

Buyers desiring information regarding supplies of and prices for **OIL FUEL** for use in Internal-combustion Engines or for other purposes should apply to **THE ASIATIC PETROLEUM COMPANY, LIMITED**, at the above address.

The Asiatic Petroleum Company also supply **KEROSENE OIL** for use in the smaller Internal-combustion Engines and are prepared to supply **PETROLEUM SPIRITS, LUBRICATING OILS, WAX** and **GREASES** in all far Eastern Markets.

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AMERICAN-HAWAIIAN STEAMSHIP CO.

(BONDED LINE)

THE PANAMA CANAL LINE

ALL SAILINGS BETWEEN U. S. ATLANTIC AND U. S. PACIFIC PORTS CANCELED UNTIL FURTHER NOTICE

OPERATING THE FOLLOWING

S. S. "**ALASKAN**"—12,000 tons, twin screw
S. S. "**AMERICAN**"—8,000 tons
S. S. "**ARIZONAN**"—12,000 tons, twin screw
S. S. "**CALIFORNIAN**"—8,000 tons
S. S. "**DAKOTAN**"—10,000 tons
S. S. "**FLORIDAN**"—10,000 tons
S. S. "**HAWAIIAN**"—8,000 tons
S. S. "**IOWAN**"—10,000 tons
S. S. "**KANSAN**"—12,000 tons, twin screw
S. S. "**KENTUCKIAN**"—10,000 tons
S. S. "**MEXICAN**"—12,000 tons, twin screw
S. S. "**MINNESOTAN**"—10,000 tons
S. S. "**MONTANAN**"—10,000 tons
S. S. "**OHIOAN**"—10,000 tons
S. S. "**OREGONIAN**"—8,000 tons
S. S. "**PANAMAN**"—10,000 tons
S. S. "**PENNSYLVANIAN**"—10,000 tons
S. S. "**TEXAN**"—12,000 tons, twin screw
S. S. "**VIRGINIAN**"—12,000 tons, twin screw

ALL OF THE COMPANY'S STEAMSHIPS ARE FITTED WITH THE GRIMM FIRE EXTINGUISHING APPARATUS

DEARBORN & LAPHAM, General Agents, No. 8 Bridge Street, New York.
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C. D. KENNEDY, Agent, Portland, Oregon.
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WILLIAMS, DIMOND & COMPANY, General Agents for the Pacific Coast, No. 310 Sansome St., San Francisco, Cal.
H. HACKFELD & CO., Ltd., Agents, Honolulu, T. H.
THEO H. DAVIES & CO., Ltd., Agents, Hilo, T. H.
ALEXANDER & BALDWIN, Ltd., Agents, Kahului, T. H.
W. F. HAGAR & CO., Agents, Philadelphia, Pa.
STREET BROS., Agents, Charleston, S. C.

THE BOOK

DIESEL MARINE ENGINES

By A. H. Goldingham, M.A.S.M.E., M.I.M.E.

CONTENTS OF CHAPTERS

1. Characteristics of Diesel Engines. 2. Details of Construction, with original formulas. 3. Indicator cards. Diagrams from actual practice. 4. Marine Diesel Engines discussed. 5. Operation and Correction. Management of Diesel Engines. 6, 7 and 8. Various types of engines described and illustrated. 9. Stationary engines. With tables and index. 206 pages, 135 illustrations, detail drawings and folding plates. Cloth, $3.00 net.

SOME REVIEW NOTICES

"Treats in a plain and concise manner on the design, installation and operation of marine Diesel engines."—American Marine Engineer.

"The chapter on operation and correction will be found of great value."—The Practical Engineer.

"Contains valuable theoretical and technical information on the subject."—The Rudder.

"The author has covered much ground and dealt with the representative makes of marine Diesel engines."—Power.

"A handbook for students and engineers . . . Details of construction are fully covered . . . Comprehensive in explanations and copiously illustrated."—**Proc. U. S. Naval Inst., Washington, D. C.**

SPON & CHAMBERLAIN 120 M, LIBERTY STREET, NEW YORK, N, Y.

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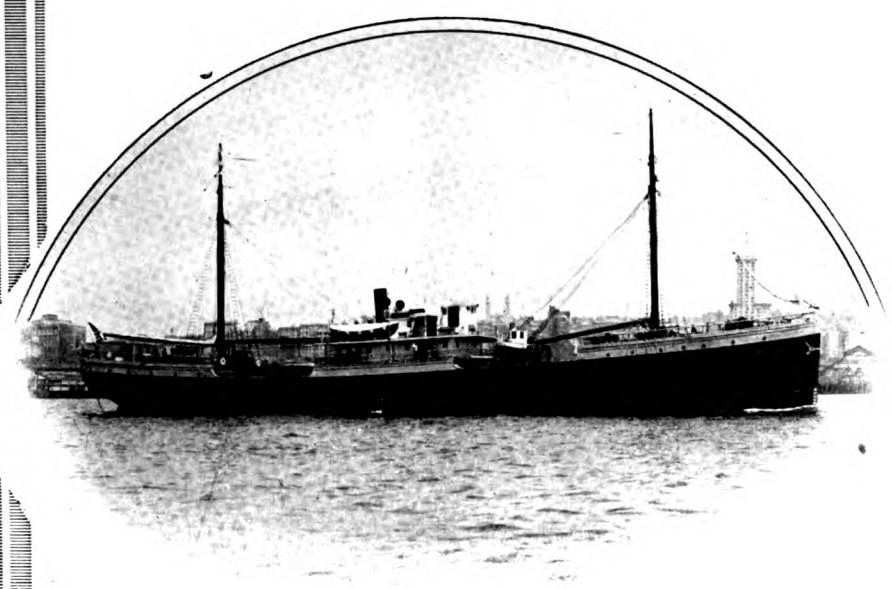


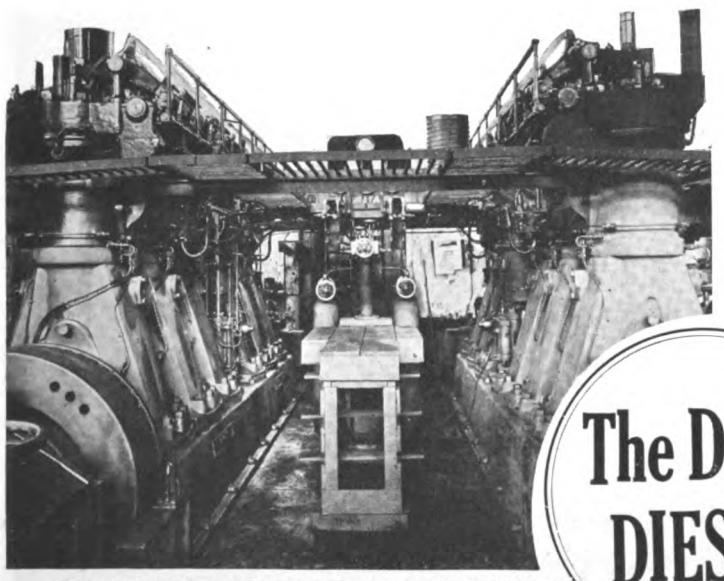
THE MOTORSHIP "LIBBY MAINE"

IN EVERY WAY A SUCCESS

Said Capt. Herre, Master of the Motorship "Libby Maine," of the performance of the Engines

The Maiden Voyage
of the
FULL-POWERED MOTORSHIP
"LIBBY MAINE"

Equipped with Two 320 b.h.p.
DOW FULL-DIESEL TYPE
Engines, Demonstrated that the
DOW-DIESEL
Is Economical, Thoroughly Reliable and Efficient and that
They ARE a Success



The Twin 320 B.H.P. Dow Engines of the "Libby Maine", on the test blocks, Alameda.

The DOW-DIESEL

DOW PUMP AND DIESEL ENGINE COMPANY ALAMEDA, CALIF.

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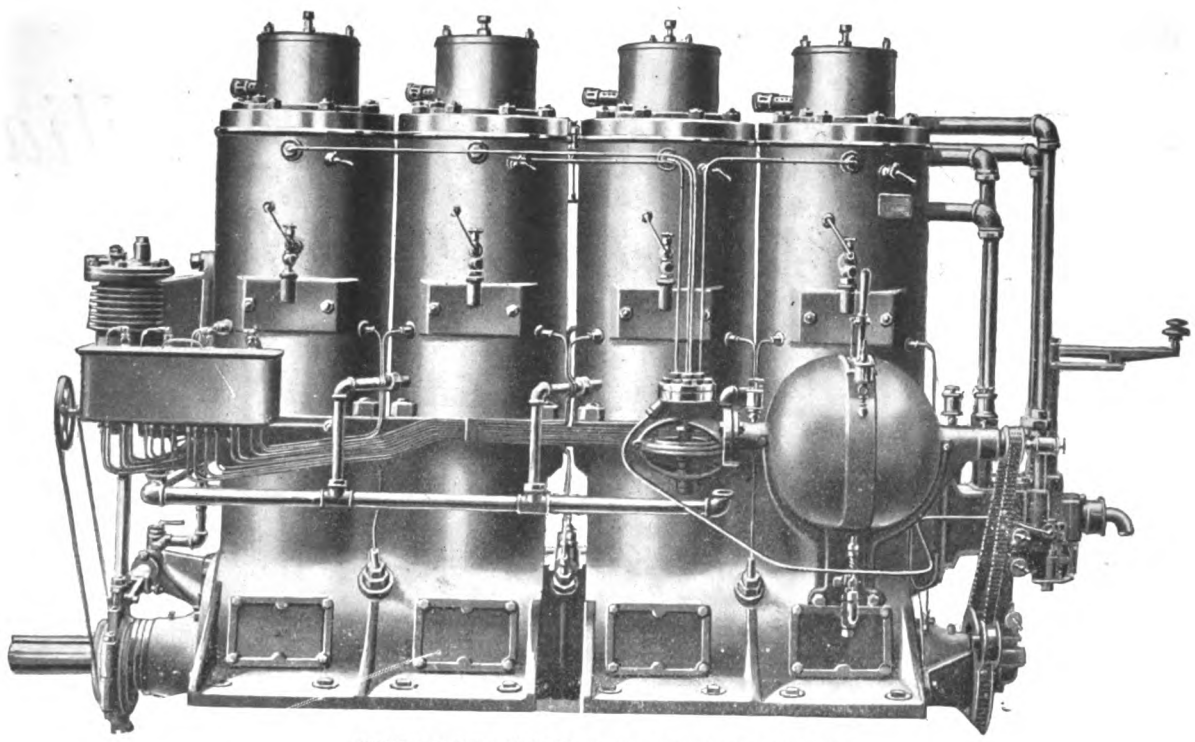
AMERICA'S PREMIER

Marine Oil Engine

FOR THE

PROPULSION OF MERCHANT SHIPS

OVER 350,000 H. P. IN OPERATION



THE MIETZ MARINE HEAVY-OIL ENGINE

Economical Operation On Low-Priced Fuel-Oils

AUGUST MIETZ CORPORATION

138 MOTT STREET
NEW YORK, N.Y.
U. S. A.

BUILT IN SIZES
FROM 40 B. H. P.
TO 350 B. H. P.

MAY WE MAIL
YOU OUR
CATALOGUE?

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Ransome Compasses

and

Binnacles

For Full-Powered and Auxiliary-Powered Motorships

Also for

Steamships, Yachts, Cruisers, Steam and Gas Launches, Workboats of All Kinds and Lifeboats

Request a Sample of Your Nautical Optician, or for Smaller Sizes Ask Your Jobber

I. C. RANSOME

2815 Jackson Street Seattle, Wash.

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NLSECO HEAVY-OIL ENGINES

ANNOUNCEMENT

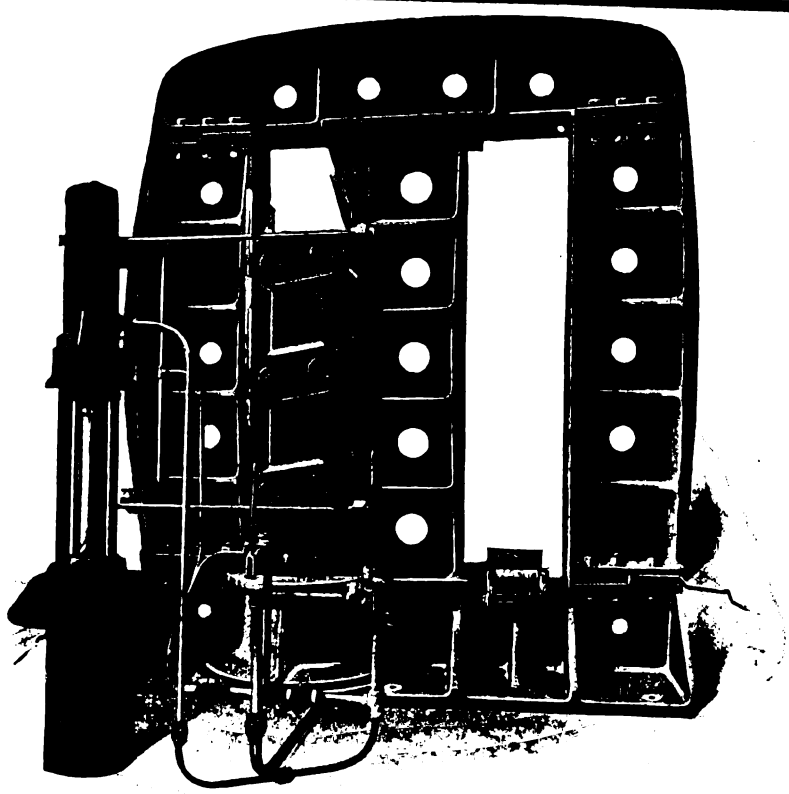
Owing to the capacity of our plant being completely occupied with the construction of Marine Diesel engines for the U. S. government, we regret we are unable to make any definite quotations to private interests during the remainder of this year. May we take your carte blanche order for delivery when conditions permit? Such deliveries will be made in strict rotation.

NEW LONDON SHIP and ENGINE CO.
Groton, Conn., U. S. A.

AMERICA'S PREMIER MARINE DIESEL MOTOR

SOUTHWARK

For Bending 12 feet of 2 inch Plate, the 1,000 Ton Bender Gives Economical Results



1,000 TON VERTICAL PLATE BENDER

Operates with Low Pressure in Conjunction with an Intensifier or Direct Form 1,500 Pound Line

SOUTHWARK FOUNDRY & MACHINE CO., 400 Washington Ave., Phila., Pa.

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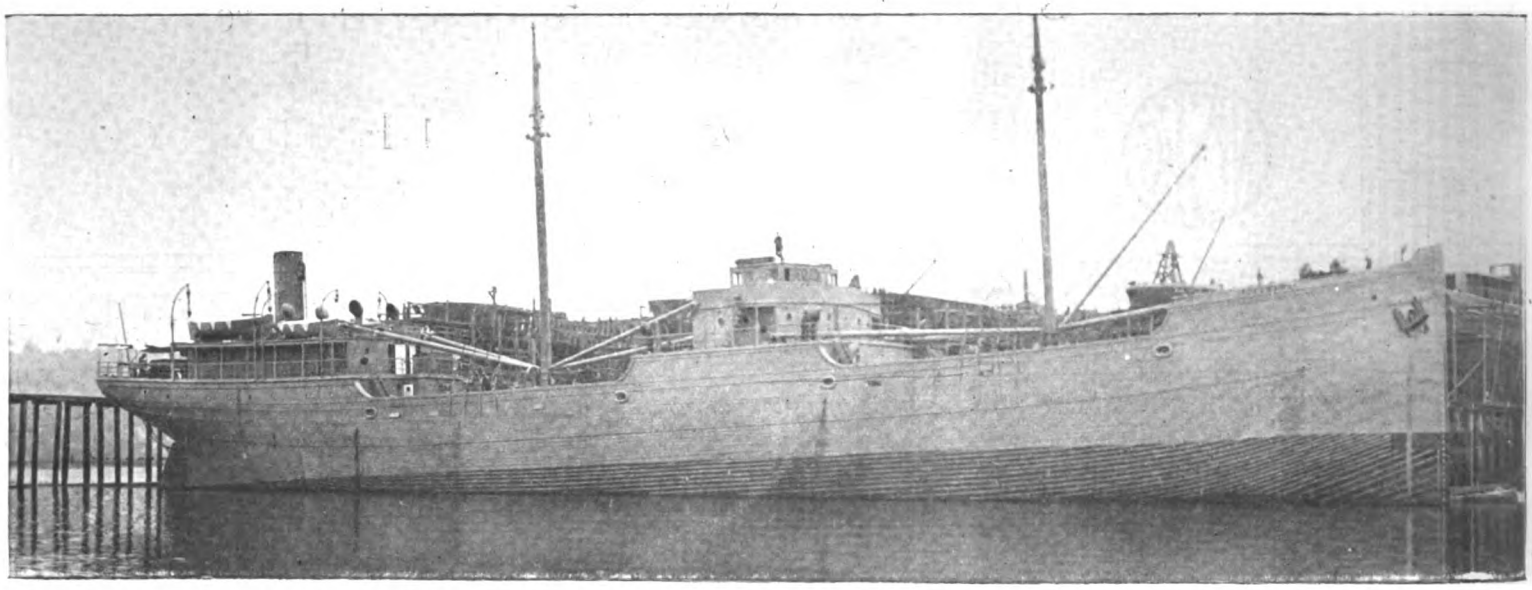
McINTOSH

McIntosh & Seymour Marine Diesel-Engines are the result of eighteen years' Stationary and Marine-Diesel engine experience and thirty years' experience in building the largest and highest grade of steam engines.

STANDARDIZED SIZES

300 b.h.p. - - 1200 b.h.p.
500 b.h.p. - - 1350 b.h.p.
750 b.h.p. - - per Shaft



The Twin-screw McIntosh & Seymour Diesel-engined Motorship "Cethana," owned by the Australian Government and fitted with two 500 b.h.p. engines.

On her trials the motorship "Cethana," a wooden vessel of 2,300 tons displacement (light) averaged 10.35 knots, with the engines averaging 183 R.P.M., on a fuel-consumption of only 0.420 lb. per b.h.p. hour of "Calol" fuel-oil containing 25% asphaltum.

McINTOSH & SEYMOUR CORP'N.

DIESEL MARINE

ALSO STATIONARY

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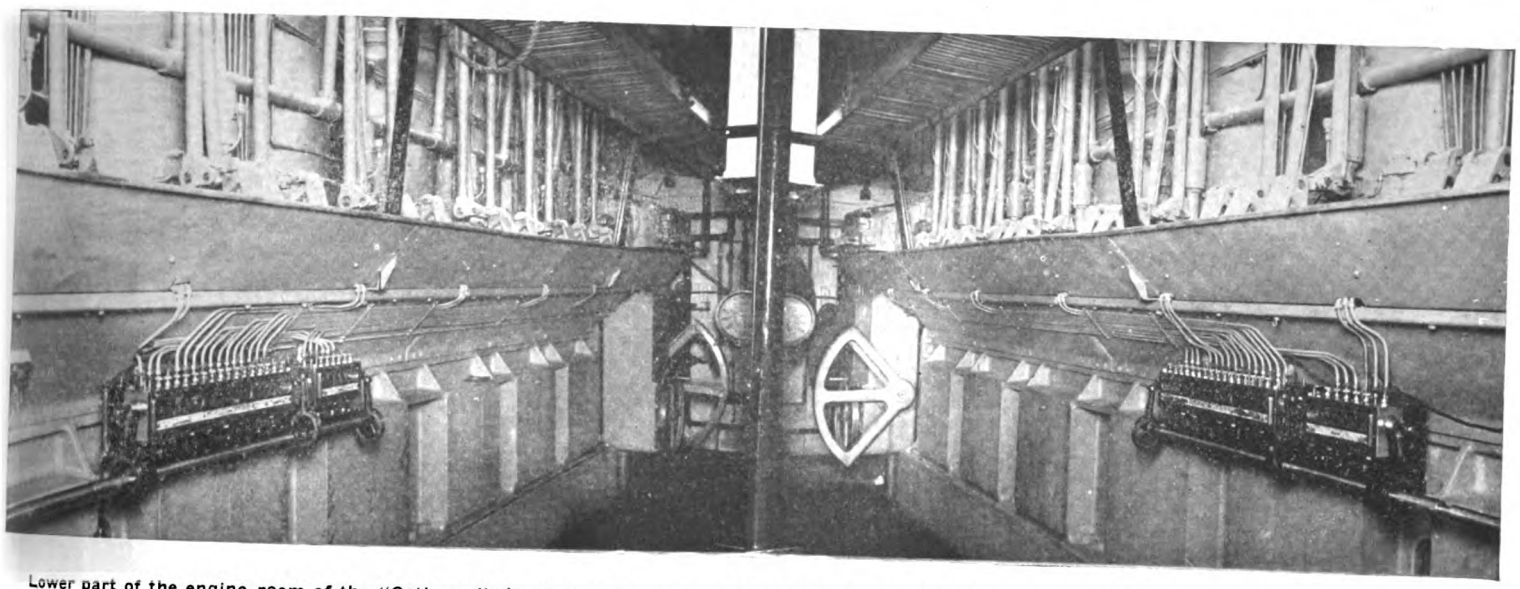
& SEYMOUR

ALL SIX-CYLINDER
DIRECT-REVERSIBLE
FOUR-STROKE CYCLE
SINGLE-ACTING MODELS

McIntosh & Seymour Marine-Diesel Type engines are built in the largest and most completely equipped engineering plant in this country devoted exclusively to the building of Diesel-Type Oil Engines.



Lower part of the engine-room of the "Cethana," showing simple control system of her two 500 b.h.p. McIntosh & Seymour reversible Diesel engines

The success of the McIntosh & Seymour Diesel engines in the Australian Government's motorship "Cethana" should cause all ship owners to make the deepest investigation into the merits of this marine engine. Let us demonstrate to you the advantages of our design.

AUBURN, NEW YORK, U. S. A.

TYPE ENGINES

DIESEL-TYPE ENGINES

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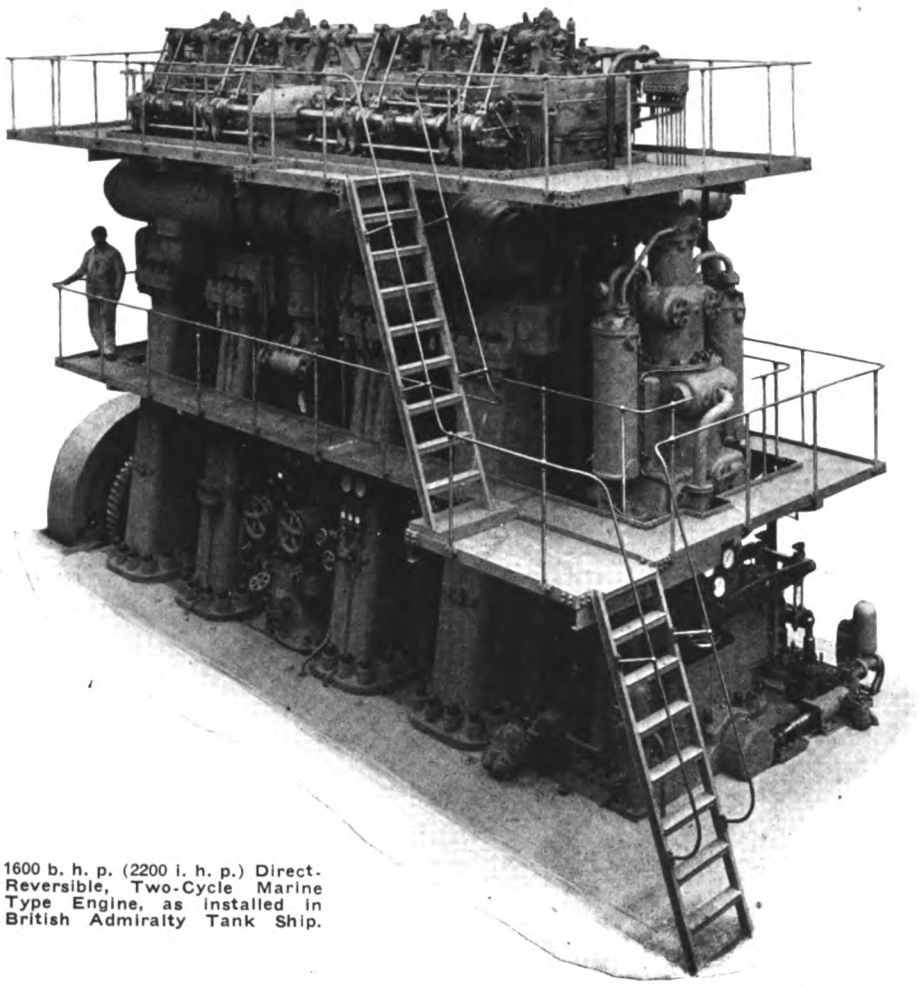
SULZER
FRÈRES

SULZER TWO-CYCLE DIESEL
MERCHANT MARINE and SUBMARINE ENGINES

STANDARDIZED SIZES:
150 b. h. p. to 4,000 b. h. p. per engine
in four and six-cylinder units

TOTAL OUTPUT OF TWO-CYCLE ENGINES 255,000 B. H. P.



1600 b. h. p. (2200 i. h. p.) Direct-Reversible, Two-Cycle Marine Type Engine, as installed in British Admiralty Tank Ship.

BUSCH-SULZER BROS. DIESEL ENGINE CO.
ST. LOUIS, MO.

Sole Owners of All Rights for Sale and Manufacture of Sulzer Diesel Engines for Installation in the U. S. A. and Its Possessions; Panama and Canada

WINTERTHUR, SWITZERLAND.

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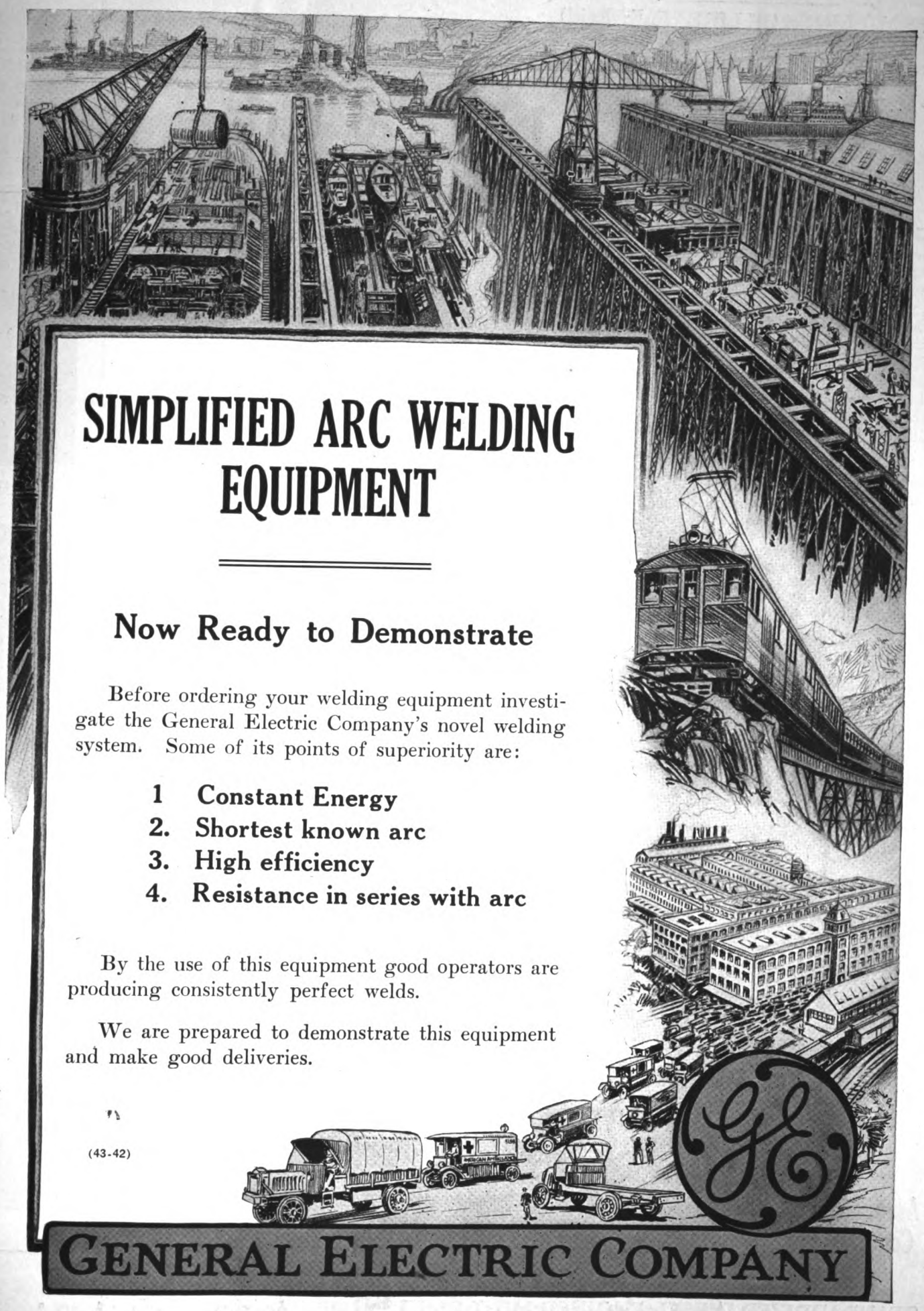

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Now Ready to Demonstrate

Before ordering your welding equipment investigate the General Electric Company's novel welding system. Some of its points of superiority are:

1. **Constant Energy**
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By the use of this equipment good operators are producing consistently perfect welds.

We are prepared to demonstrate this equipment and make good deliveries.

(43-42)

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SHARE CAPITAL

500 MILLIONS OF LIRE (Fully Paid)

Societa Anonima Italiana

GIO. ANSALDO & CO.

Registered Office, Rome

Administrative and Industrial Office, Genoa, Italy

THE GIO. ANSALDO & C. WORKS, founded by the PRIME MINISTER CAVOUR in 1853 under the Direction of the distinguished engineer, GIOVANNI ANSALDO, had, especially under the subsequent Management and Direction of the Bombrini Brothers, a prosperous career, during which the manufacture was extended from early Locomotives to Marine Engines and to Shipbuilding and other Naval Work. The greatest impulse, however, was given by the late Comm. Ferdinando Maria Perrone in 1904, when the Firm was transformed into the present LIMITED SOCIETY to attain wider scope, which has now been fully realized by his Sons. The original WORKS OF SAMPIERDARENA and the SHIPYARD OF SESTRI PONENTE have recently been greatly enlarged and augmented by other ESTABLISHMENTS and associated CONCERNS, devoted not only to mercantile and Naval Shipbuilding in all its branches, but also to armour plate, guns, and war material of all kinds.

The SOCIETY has at present at work, in its own 28 ESTABLISHMENTS and other associated CONCERNS as hereunder enumerated, about 50,000 hands, men and women, and is capable of building and is building:—

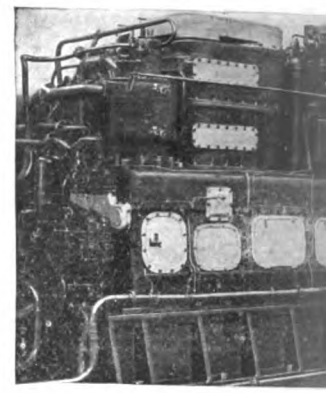
1st—Warships and mercantile vessels of all kinds and sizes from big Super-dreadnoughts and ocean liners to destroyers, torpedo boats, submarines, cargo steamers, tug boats, motor boats, etc.
2nd—Diesel marine oil engines up to 2,000 b. h. p., also marine steam propelling engines, both reciprocating and turbine engines with and without gearing.
3rd—Steam boilers, both water-tube and cylindrical, of all types and sizes.
4th—Locomotives and tenders complete, and Machine Tools.
5th—Armour plates, guns, armoured turrets complete, ammunition complete, metallic cartridges and casings.
6th—Auxiliaries for propelling machinery, and all kinds of auxiliary machinery for ships, such as steering gears, capstans, winches, distilling condensers, and screw propellers.
7th—Dynamos and all electric appliances, auxiliary electric machinery both for ship and land service, electric gear for turrets and guns, elevators, steering gears, electric capstans and winches, cranes and electric propelling machinery.
8th—Aeroplanes and their motors.
9th—Steel, cast iron and bronze castings of all varieties and sizes.
10th—Steel forgings of all kinds and sizes, special steels, and Files.
11th—Boiler steel tubes, steel, iron, copper and brass pipes.
12th—Furniture of all descriptions, both wood and metallic, for warships, liners and mercantile vessels.

List of Establishments

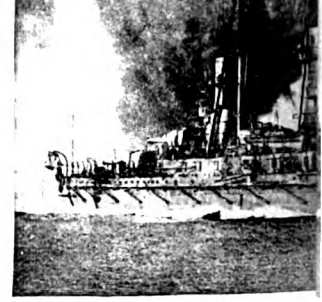
1.—General Engineering Works	SAMPIERDARENA
2.—Locomotive Construction Works	SAMPIERDARENA
3.—Artillery and Big Gun Works	SAMPIERDARENA
4.—War Munition Works	SAMPIERDARENA
5.—Aeroplane Motor Works, San Martino	SAMPIERDARENA
6.—Cast Steel Foundry	CORNIGLIANO LIGURE
7.—Armour Plates and Forging Plant	CORNIGLIANO LIGURE
8.—Oxygen and Hydrogen Production Plant	CORNIGLIANO LIGURE
9.—New Artillery and Big Gun Works	CORNIGLIANO LIGURE
10.—Electric Products Plant	CORNIGLIANO LIGURE
11.—Bronze Foundry	CORNIGLIANO LIGURE
12.—Delta Metal and Alloys Foundry	CORNIGLIANO LIGURE
13.—Brass Cartridge Works	CORNIGLIANO LIGURE
14.—Internal-Combustion Engine Works	CORNIGLIANO LIGURE
15.—Aeroplane Works No. 1 (Marine Hangars)	BORZOLI (Mare)
16.—Aeroplane Works No. 2	BOLZANETO
17.—Aeroplane Works No. 3	TORINO (Corso Peschiera 251)
18.—Tube Mills	FEGINO (Val Polcevera)
19.—Projectile-Case Works	FEGINO
20.—Naval Shipyard	SESTRI PONENTE
21.—Saw Mill and Boat Yards	VOLTRI
22.—Ammunition Works	SESTRI PONENTE
23.—Cast Iron Foundry	PEGLI
24.—Fire Brick Plant	STAZZANO (Serravalle Scrivia)
25.—Genoa Shipyards	MOLOGIANO (Porto di Genova)
26.—Iron Mines	COGNE (Valle d'Aosta)
27.—Electric Furnaces for Steel and Pig Iron and Rolling Mill	AOSTA
28.—Special Alloys Plant	AOSTA

Associated Concerns

1.—Shipyard and Works, Savoia	CORNIGLIANO LIGURE
2.—Shipyard and Works, Fiat San Giorgio	SPEZIA
3.—Internal-combustion Engine Works, Fiat San Giogio	TORINO
4.—Ore Mines	COGNE (Val d'Aosta).
5.—Italian National S.S. Company	GENOVA
6.—Lignite Mines	GROSSETO (Tuscany).
7.—Cerpelli's Centrifugal and Turbine Pump Works	LA SPEZIA
8.—Westinghouse Company	VADO LIGURY
9.—Magnesite Mines	QUAREIDUELLO (Tuscany)
10.—Insulators Company	LEGHOURN



FIAT-SAN GIORGIO HIGH



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SUBMARINE "

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each

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American Branch: 80 M

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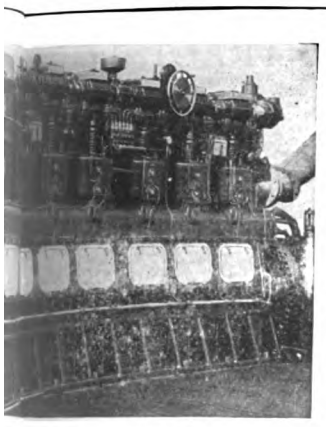
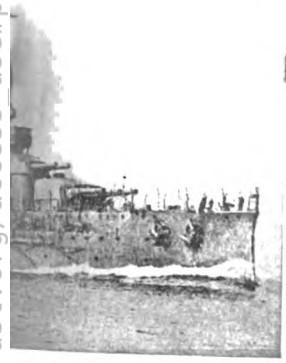


SPEED MOTOR, 1350 B. H. P.



SHIP "GULIO CESARE" OF LIAN NAVY

-SAN GIORGIO"

SHARE CAPITAL
22 MILLIONS OF LIRE (Fully Paid)

ANSALDO-SAN-GIORGIO
(LIMITED)
Ex Fiat-San-Giorgio

Shipyard, Muggiano (Spezia)
Offices and Engine Works, Turin, via Cuneo, 20, Italy

Specialists in the construction of

Diesel and Steam Cargo Vessels, Torpedo Boats, Submarines Diesel-Engined Submarine Chasers and Heavy-Oil Marine Motors

(Type Fiat-San Giorgio)

such as were supplied to the Navies of

Brazil, Denmark, Great Britian, Italy, Portugal, Spain, Russia, Japan, United States and Sweden, and Germany (before the war)

Complete Construction of War and Merchant Ships. Cargo and Passenger Vessels of any Capacity. Ships equipped and repaired.

Heavy-Oil Marine Motors, type Fiat-San Giorgio, for War and Merchant Ships of any capacity.

The Fiat-San Giorgio plants, which now show a continuous industrial development, will employ from 18,000 to 20,000 workingmen during the current year.

The Italian Emergency Fleet

The Spezia Shipyard every year will launch not less than 18 standardized Diesel Motorships of 8,100 to 10,000 tons D. W. capacity each, with complete equipment and machinery built by the FIAT-SAN GIORGIO exclusively, while the output of submarines and torpedo-boats will remain undiminished.

Guaranteed Results for Merchant Ship Motors (Model 2 cy.—175=1200 b. h. p.)

—Reversing Motors from full ahead to full astern done in ten seconds.

—Fuel Consumption two-cycle engines, 0.45 lbs. heavy oil, high density containing up to 20% Pitchy and Tarry Matters.

—Lubricating Oil Consumption 0.017 lbs.

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each
Now Building at Muggiano (Spezia)

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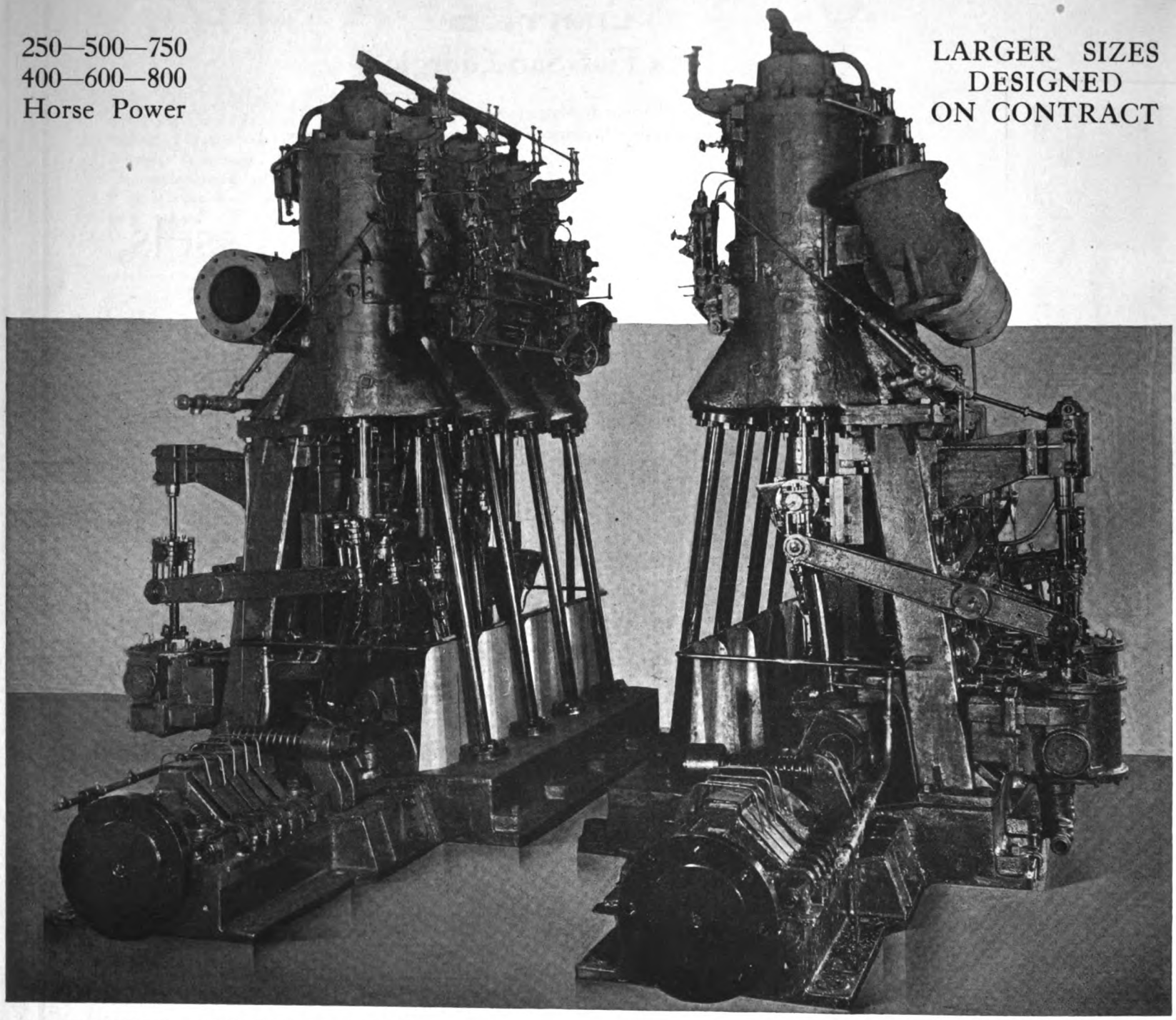
250—500—750
400—600—800
Horse Power

LARGER SIZES
DESIGNED
ON CONTRACT



LOW FUEL CONSUMPTION
EASILY OPERATED

DIRECT REVERSIBLE
4, 6 and 8 CYLINDERS

QUICK DELIVERIES

H. W. SUMNER COMPANY

L. C. SMITH BUILDING

H. W. SUMNER — *Seattle, U.S.A.* — ALBERT E. PARKER

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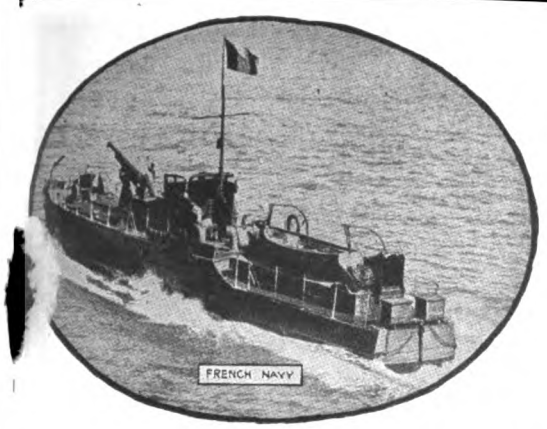

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DISTINGUISH MAN AND MACHINE

Four Stripes Now Distinguish

THE STANDARD ENGINE

a stripe for each year since the war began. For this is the engine in all the 80-foot and 110-foot British, French, Italian, and U. S. Submarine-Chasers.

The unconquered veteran of War will serve *you* well. Get latest data.

Back of the Standard Guarantee is the

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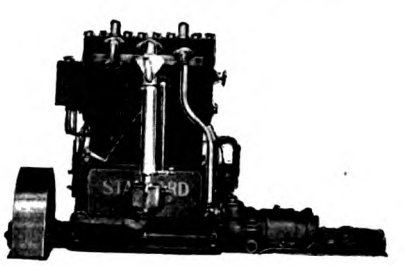

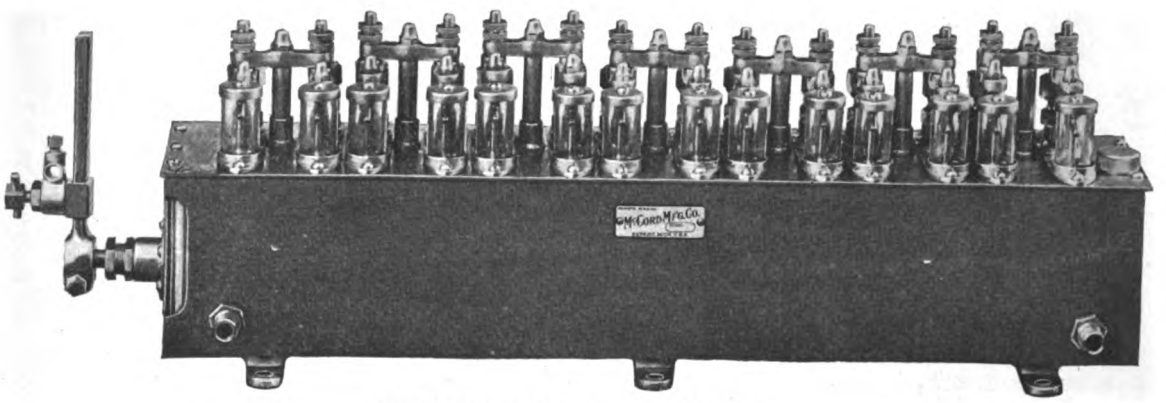

McCord Class "B" 14 feed Lubricator

Better Lubrication Service and Economy Combined

EVERY lubrication requirement of powered ships is fully met in the design, construction and operation of the McCord Force Feed Lubricator.

The McCord is built up in units. Each pump is complete in itself and may be removed for inspection or cleaning without disturbing the regulation or operation of the other pumps. Made in from one to eighteen feeds.

The McCord feeds only live oil, because it can feed oil but once. And it will feed the oil uniformly and positively to all parts of the power unit or units.

It operates perfectly regardless of temperature, viscosity of oil, pressure, vacuum or length of feed lines, enabling your engine to stand up to full capacity.

McCord Lubricators will not corrode in salt water service.

Write or wire us for other McCord advantages as applied to your particular needs. Ask for catalog.

McCORD MANUFACTURING COMPANY, Inc.

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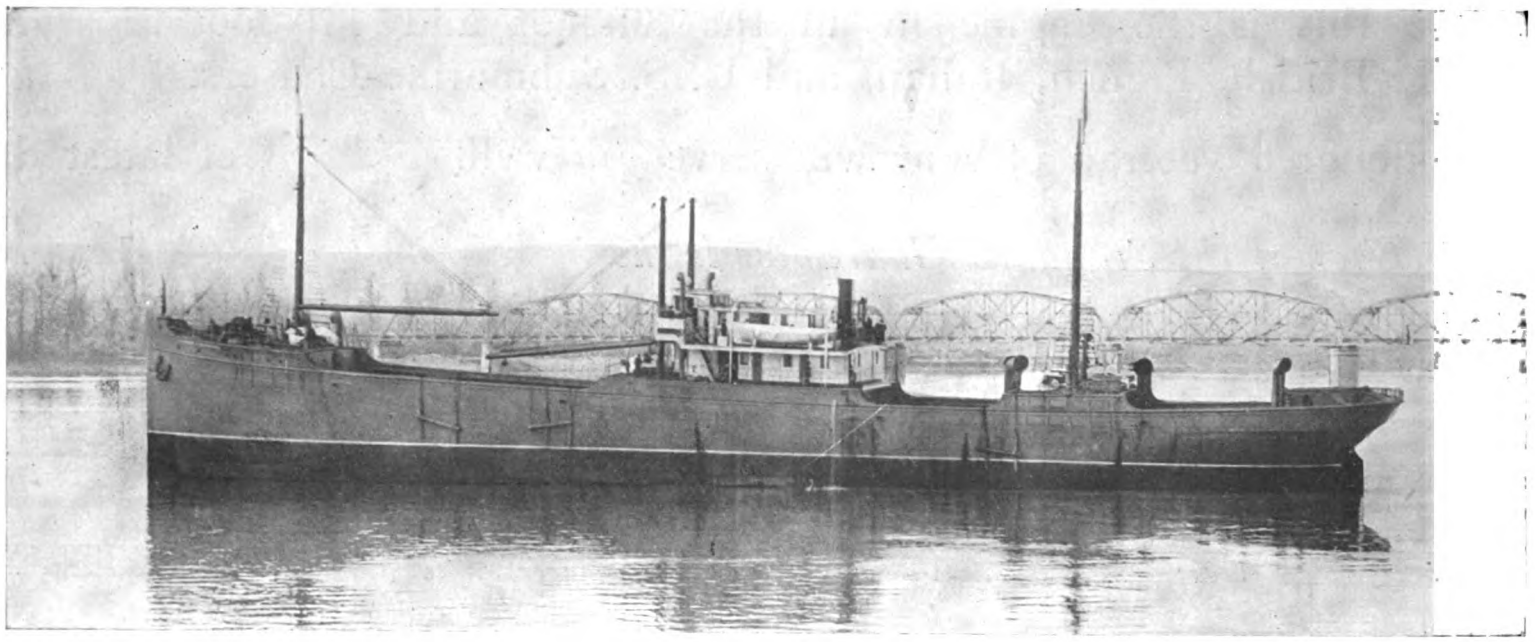
WINTON
DIESEL OIL ENGINES
for MARINE SERVICE



MOTOR STEAMER JAMES TIMPSON, equipped with two Winton Oil Engines. This ship is the acme of reliability, economy and a splendid example of a Winton installation.

WE ARE OFFERING DELIVERY ON 200 TO 500 HP SIZES

Winton Engine Works, Cleveland, Ohio, U.S.A.

Seattle Representative - - **H. W. STARRETT, SUNSET ENGINE COMPANY**

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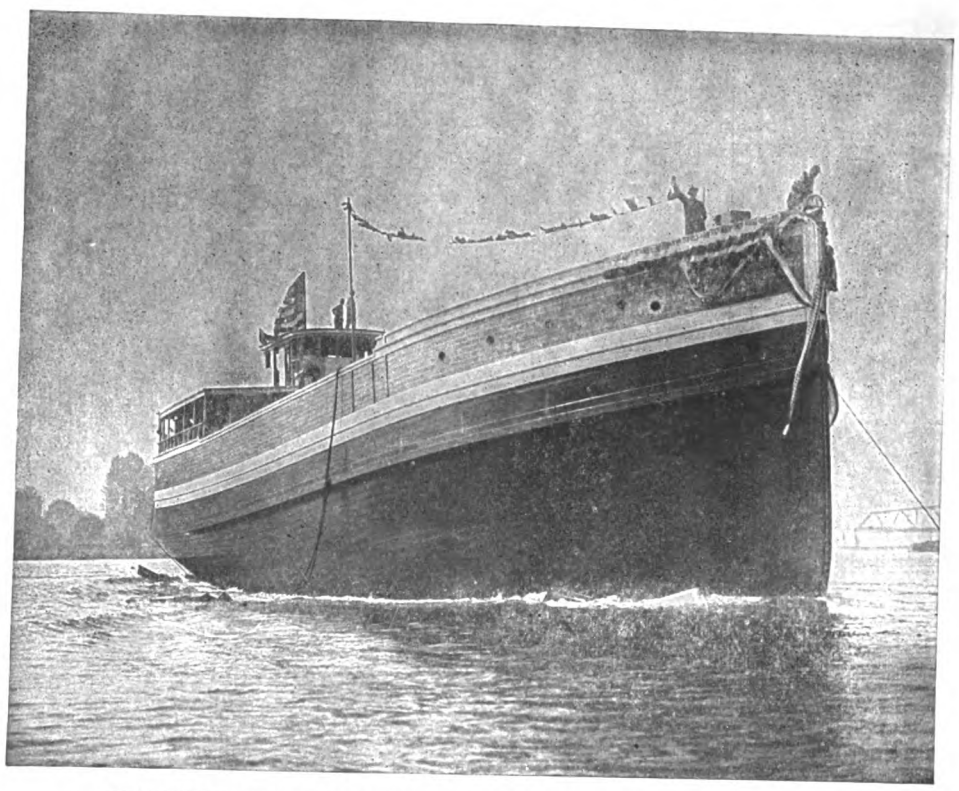
ATLAS FULL DIESEL TYPE ENGINE

SERVICE RELIABILITY POWER

ATLAS-IMPERIAL

DIESEL ENGINES BUILT

IN SIZES From 110 to 1200 B. H. P.



DISTILLATE ENGINES BUILT

IN SIZES From 4 to 250 B. H. P.

FREIGHTER "APEX" EQUIPPED WITH 350 H. P. ATLAS DIESEL

Mr. Lee H. Wakefield, the owner of the "Apex" is also the owner of seventeen boats installed with Atlas engines, two of these being Atlas Diesels. Mr. Wakefield selects the Atlas knowing that it is the best engine obtainable and that their service is unequaled.

AN ENGINE NOT AN *EXPERIMENT*

ATLAS-IMPERIAL GAS ENGINE CO.

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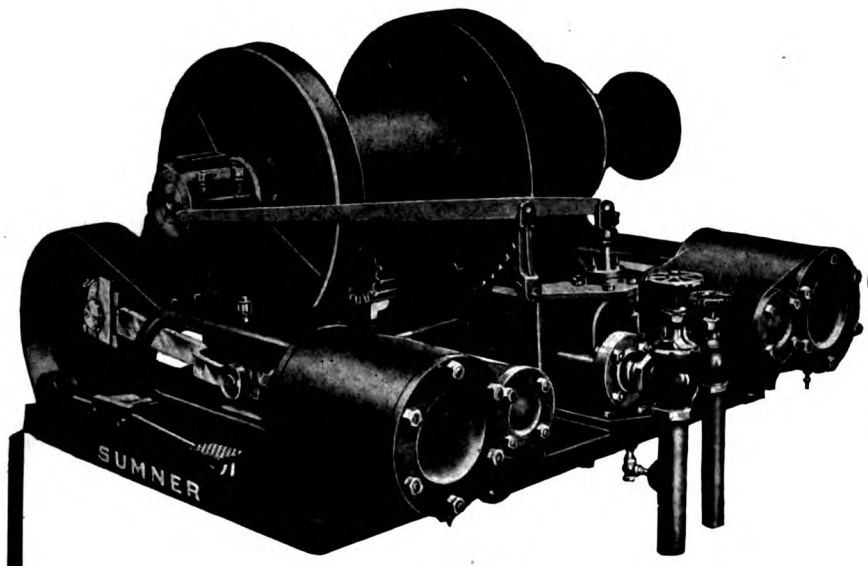


Model No. H32

Write us for Complete Description with Weights and Prices

SUMNER IRON WORKS

EVERETT, WASH., U. S. A.

Sumner Steam Cargo Hoist

A New Model

CYLINDERS—8"x10"; steam pipe 2"; exhaust pipe 2½"; self-draining piston valves.

MANIFOLD FOR STEAM AND EXHAUST—Is lowest part of cylinders and valves, thereby draining all condensation from exhaust.

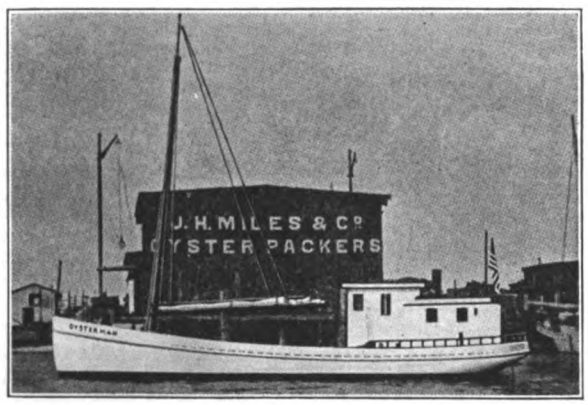
WITH BALANCED THROTTLE VALVE—Securely bolted. Lever in any position desired.

MAIN SHAFT—Forged Steel, 4 3/16" in diameter.

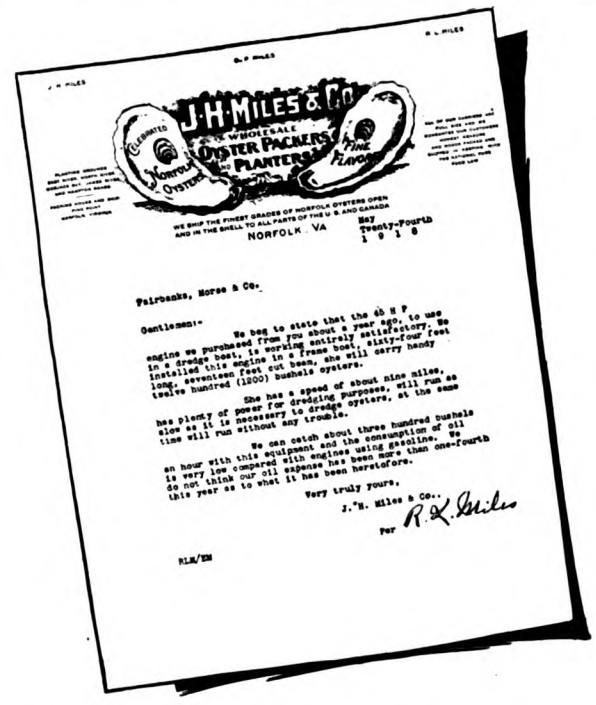
EXTENDED BOX—With 13" bearing, supporting main shaft the entire distance between main gear and gypsy head.

IF NOT RIGHT WRITE WE WILL MAKE RIGHT

Makes Big Saving on Oyster Dredging Boat



The "Oysterman" equipped with a 45 H. P. "C-O" engine



FAIRBANKS-MORSE "C-O" MARINE OIL ENGINES

30 to 200 H. P.—using low-priced fuel oils, are operating with great success and economy on many widely divergent types of power boats and work vessels.

Fairbanks, Morse & Co.

Chicago **New York** **Portland** **San Francisco** **Seattle**

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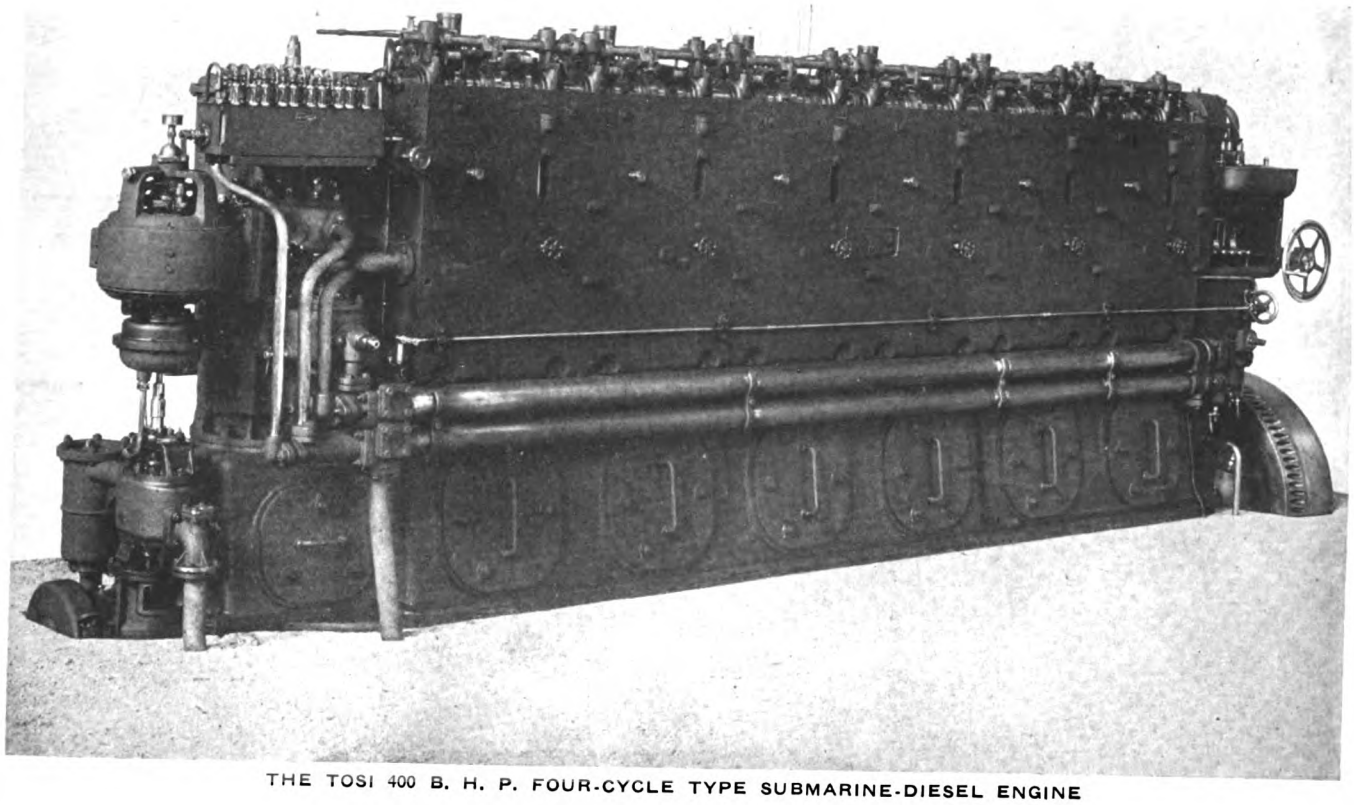
HEAVY
· OIL ENGINES ·

DIESEL ENGINES FOR DECK AND ENGINE-ROOM AUXILIARY PLANTS ON MERCANTILE AND NAVAL SHIPS.

AUXILIARY PROPELLING MACHINERY FOR SAILING-VESSELS.



THE TOSI 400 B. H. P. FOUR-CYCLE TYPE SUBMARINE-DIESEL ENGINE

HIGH-SPEED DIESEL ENGINES FOR FAST NAVAL SURFACE-CRAFTS, AND SUBMARINES.

FOUR AND TWO CYCLE CROSS-HEAD MARINE DIESEL ENGINES OF THE HEAVY-DUTY MERCHANT MARINE TYPE.

MORE THAN 100,000 B. H. P. IN USE ON 1200 CYLINDERS UP TO 400 B. H. P. PER CYLINDER.

LEGNANO, ITALY.

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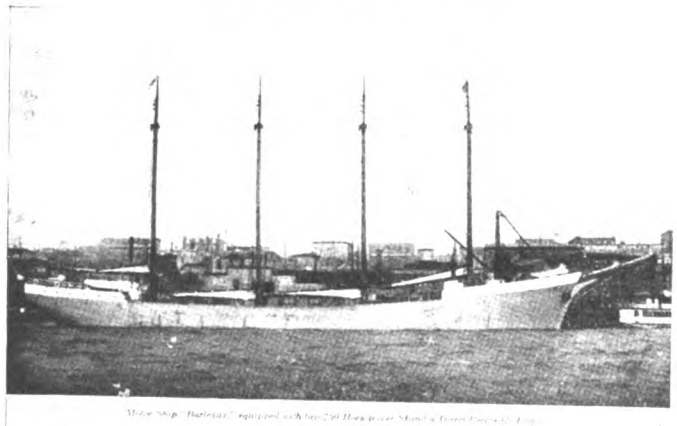
SKANDIA PACIFIC OIL ENGINE COMPANY

SKANDIA OIL ENGINES

Make Compact Installations

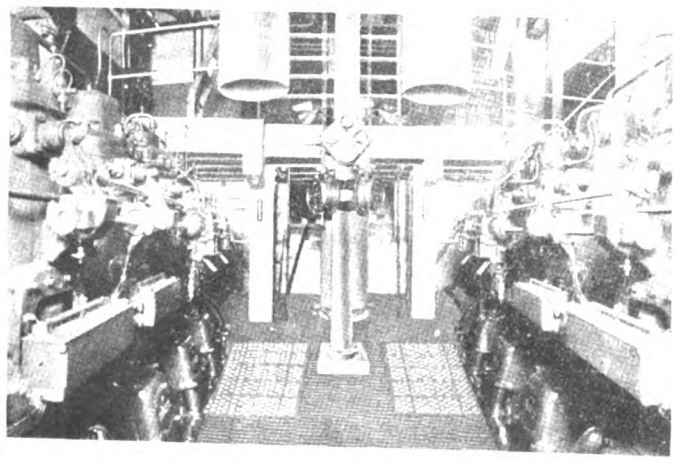
(Marine and Stationary)



Operate on Low Gravity, Crude or Fuel Oils

550,000 B.H.P. Now in Use and on Order

5 B.H.P. to 500 B.H.P.



5 B.H.P. to 500 B.H.P.

SKANDIA PACIFIC OIL ENGINE COMPANY

WORKS: OAKLAND, CALIFORNIA, U. S. A.

Northwestern Agents SKANDIA ENGINEERING CO.
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Eastern Agents H. S. JOHANNSEN
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SKANDIA MARINE OIL ENGINES

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SKANDIA PACIFIC OIL ENGINE COMPANY

BUILDERS UNDER LICENSE OF THE

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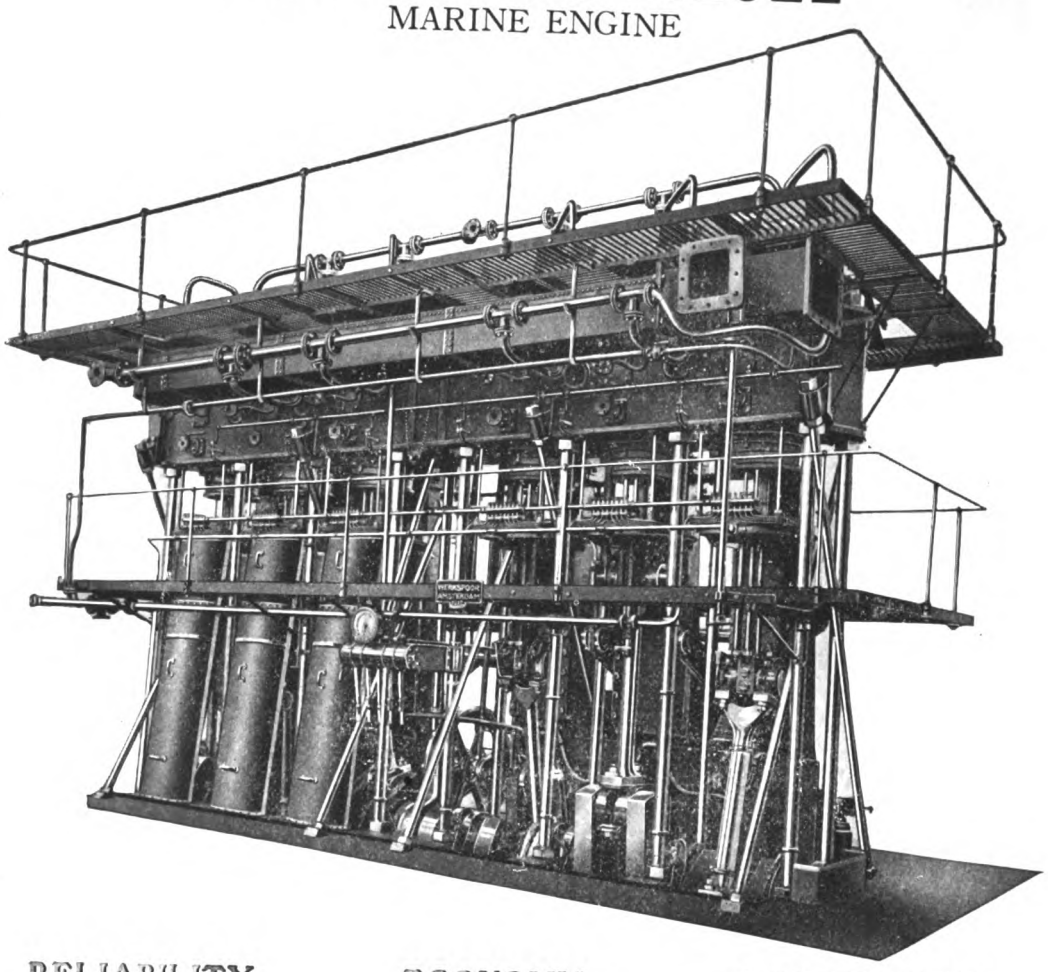
MARINE ENGINE



RELIABILITY ECONOMY ACCESSIBILITY

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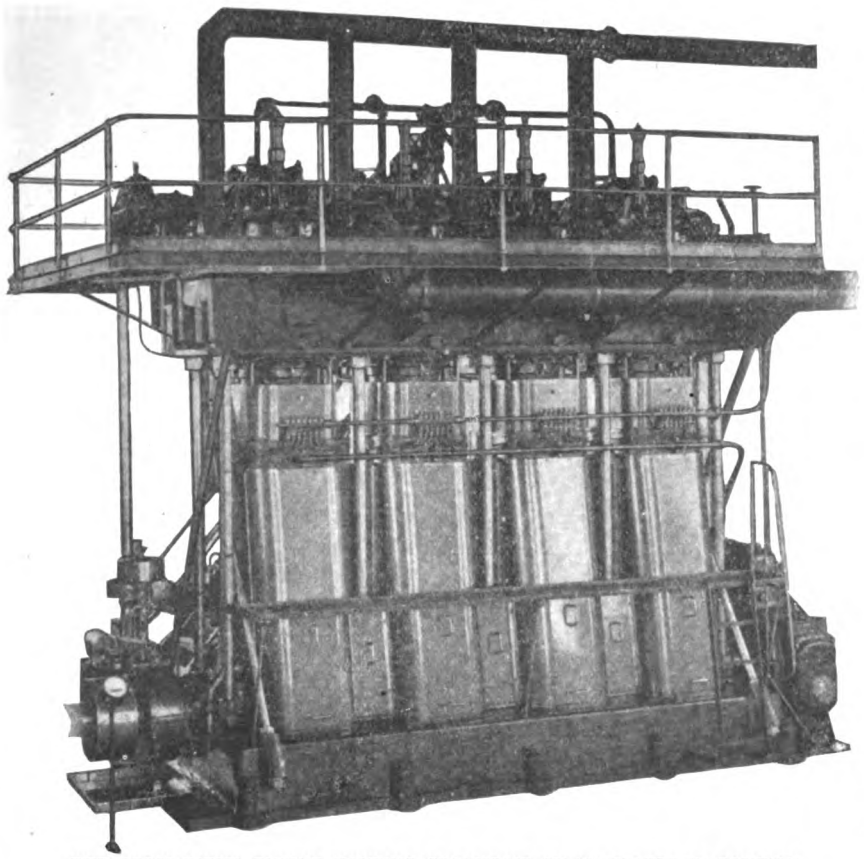

WERKSPOOR-DIESEL ENGINE SHOWING CRANKCASE SPLASH-PLATES IN POSITION

True Value of Accessibility and Its Relation to Reliability

Given a well-designed and properly constructed Diesel marine-engine, its steady and continuous operation rests entirely with the ship's-engineers in charge.

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An engine which gives hard work to attend and overhaul will be indifferently handled by the average ship's-engineers, and their reports to the owner will be unfavorable.

These two illustrations demonstrate the remarkable accessibility of the Werkspoor-Diesel engine. For rapid adjustment and overhaul no other Diesel engine can compare with it.

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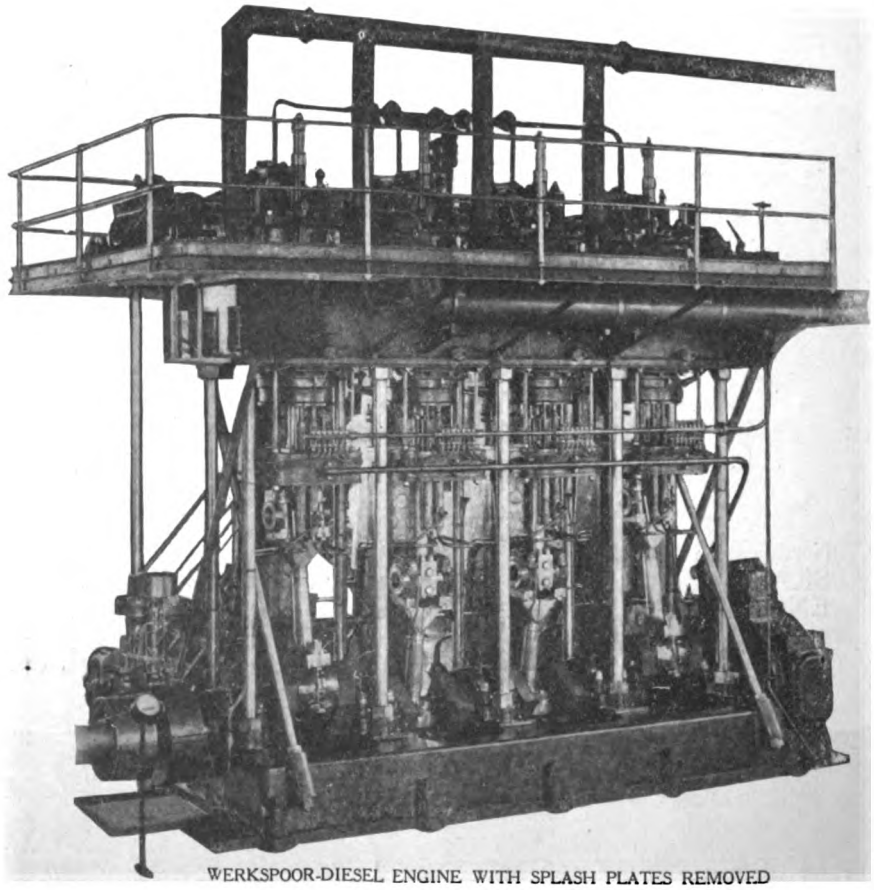

WERKSPOOR-DIESEL ENGINE WITH SPLASH PLATES REMOVED

DIESEL MARINE TYPE ENGINES

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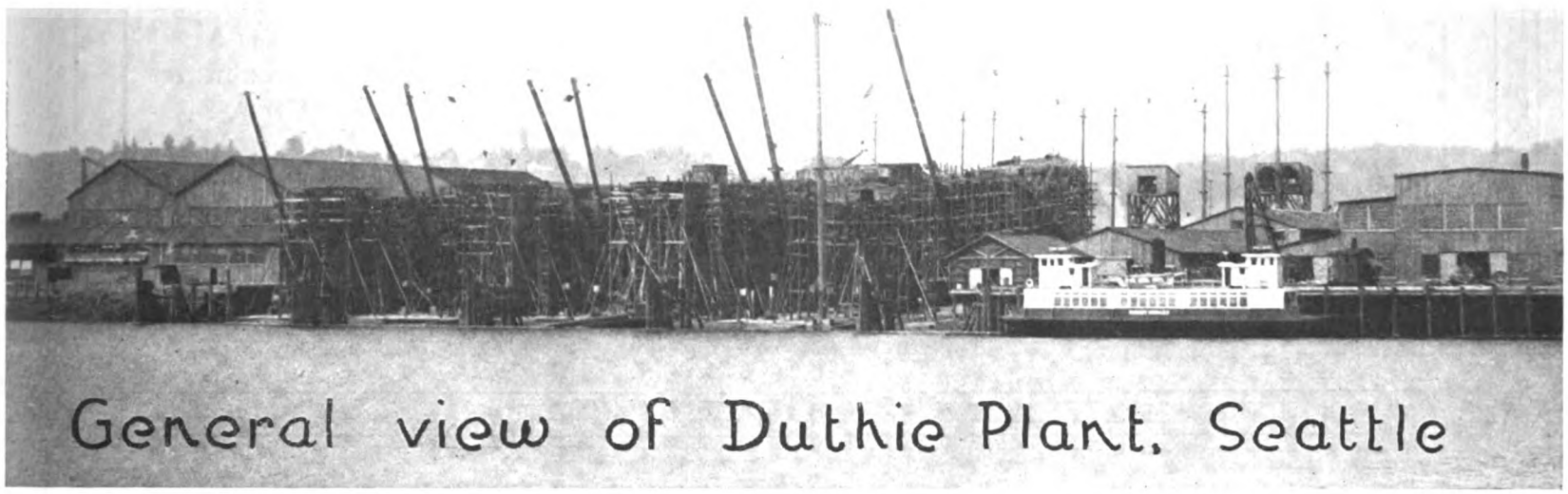
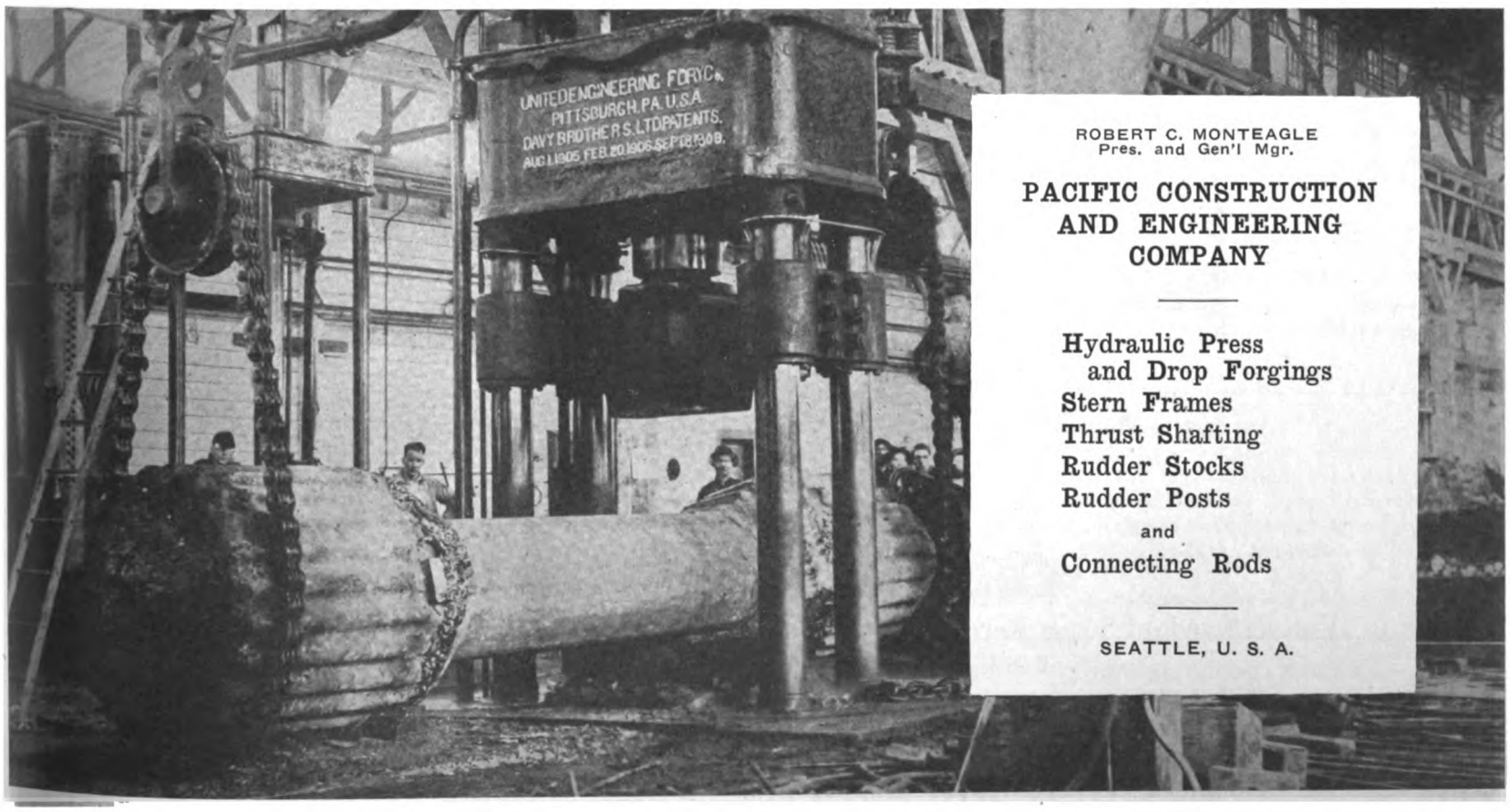


General view of Duthie Plant, Seattle



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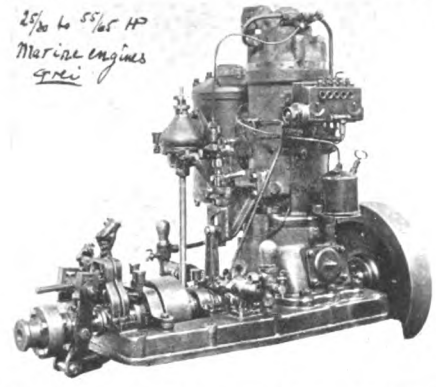

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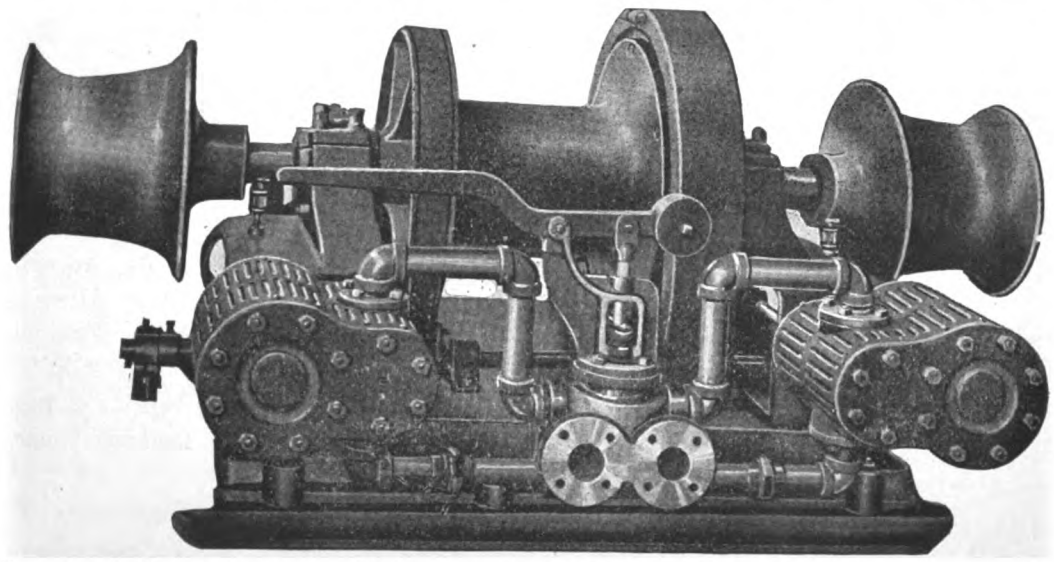

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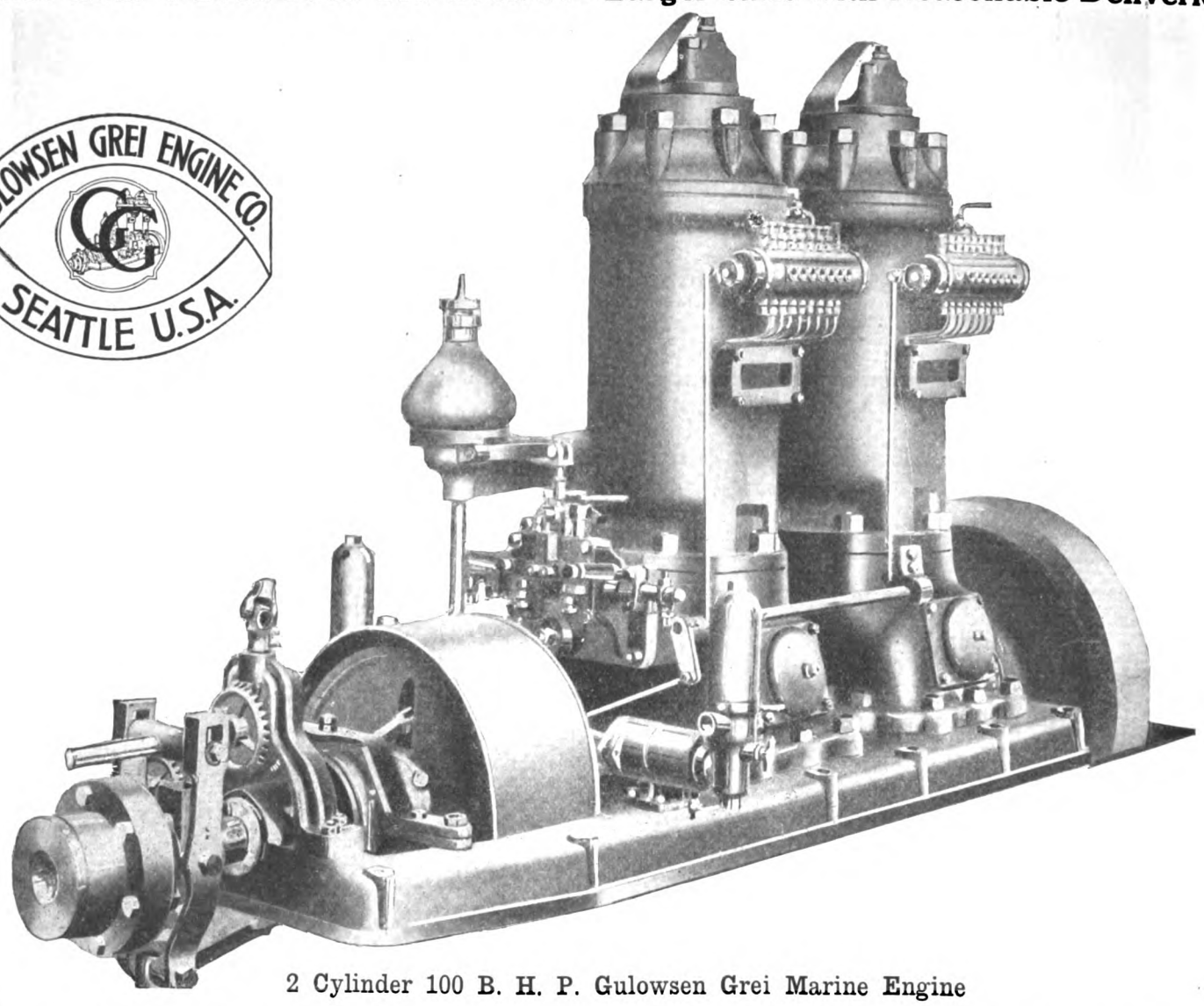

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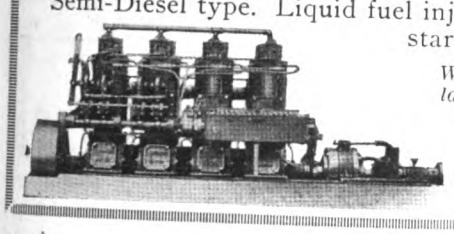

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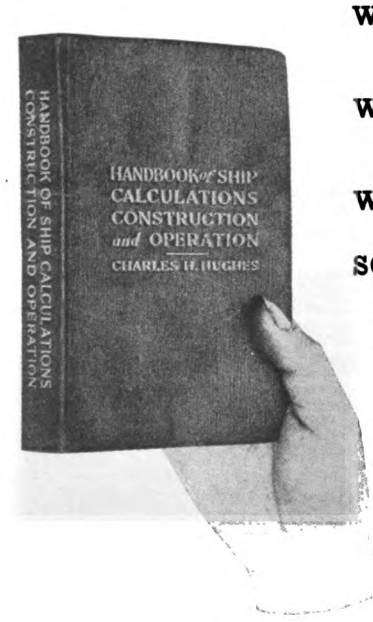

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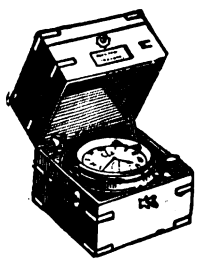

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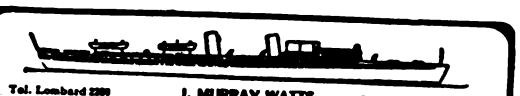

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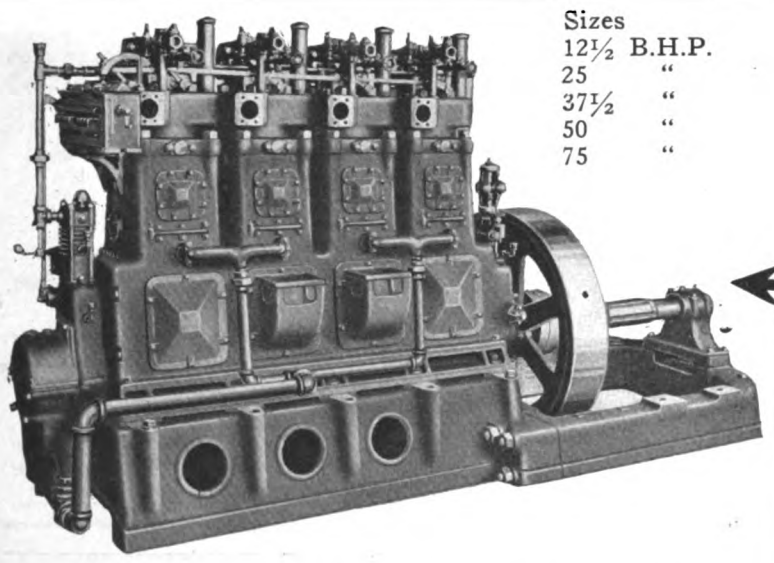

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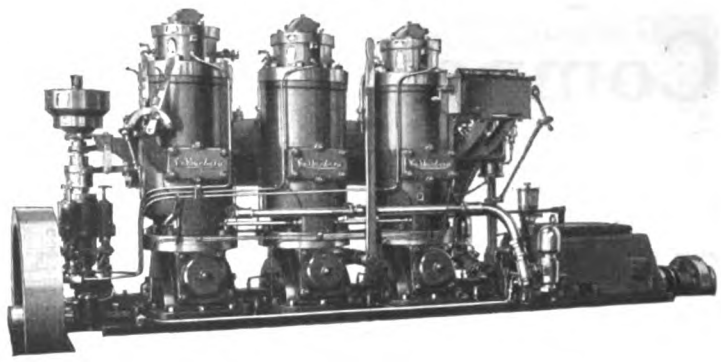

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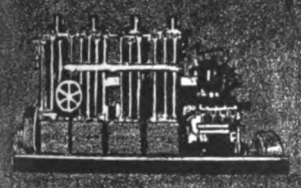

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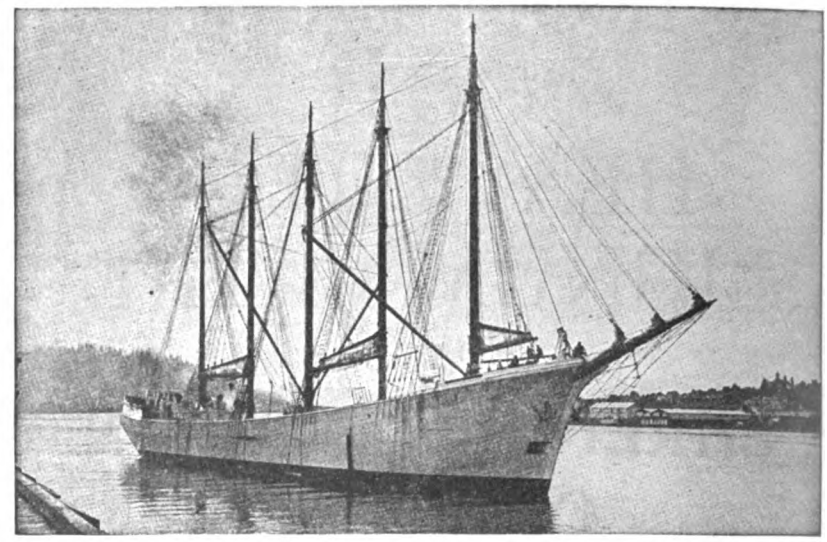

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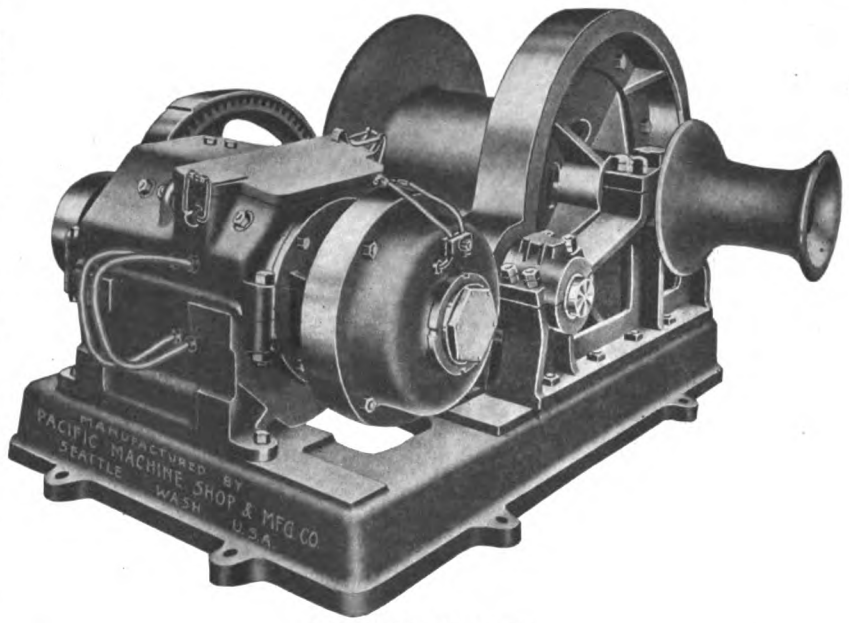

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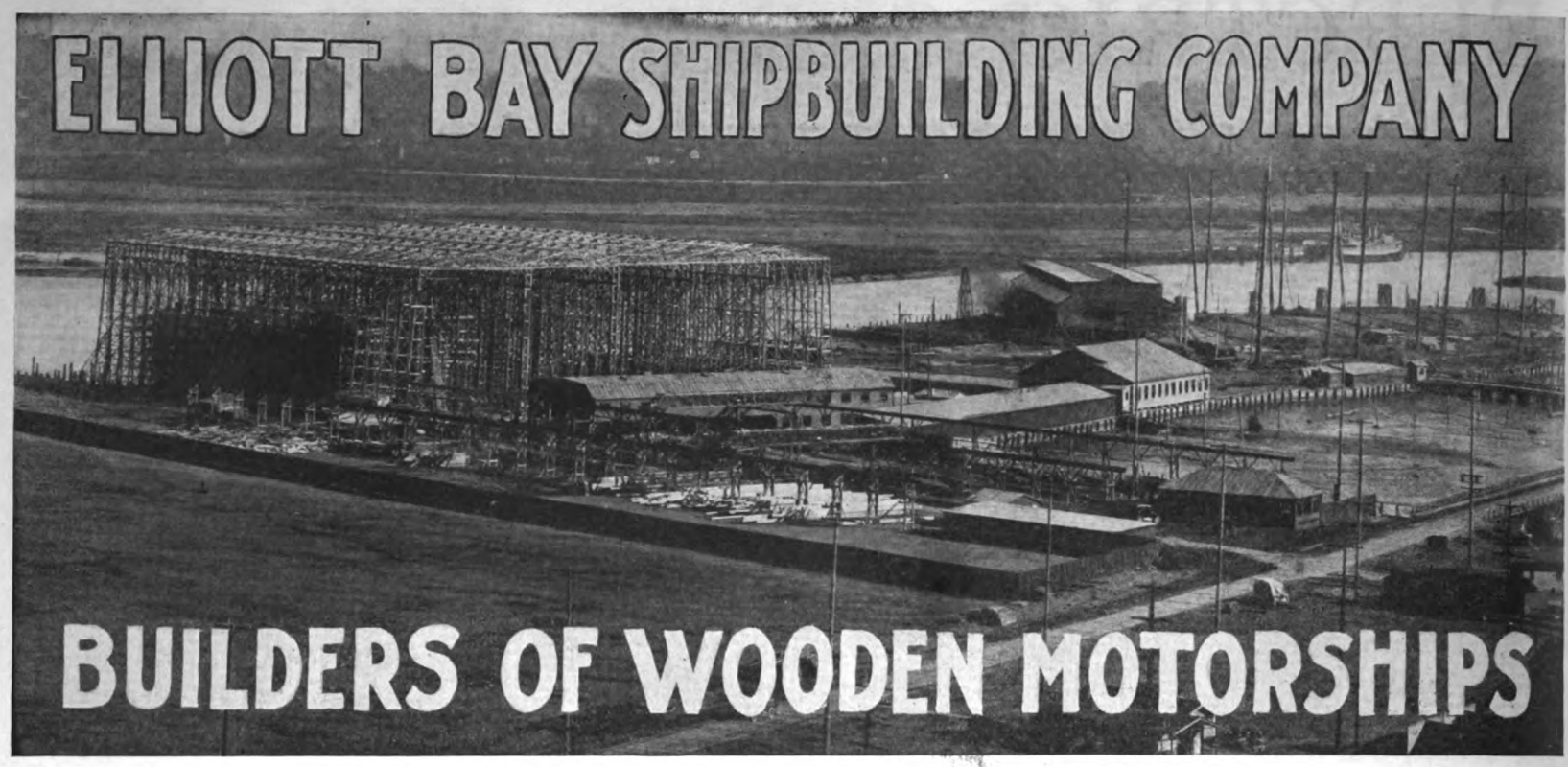

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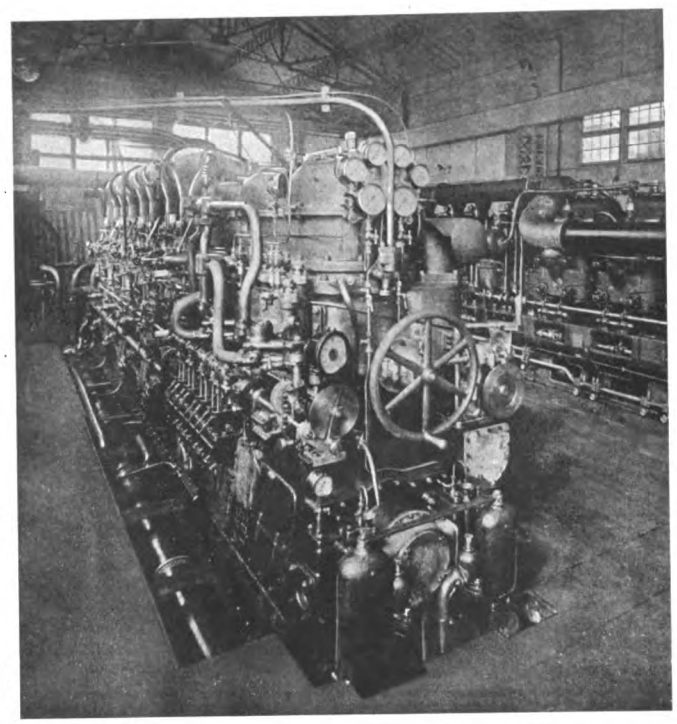

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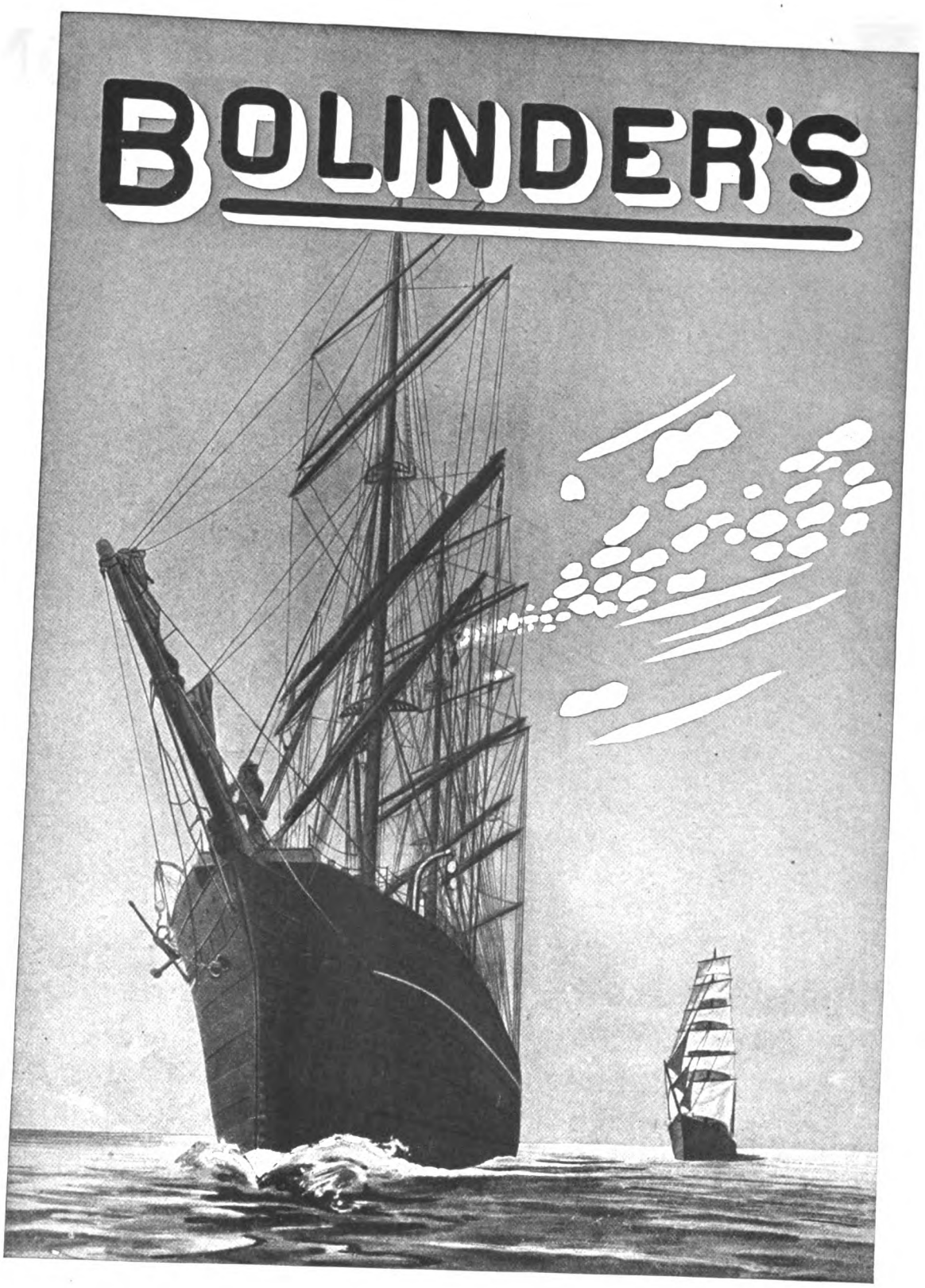

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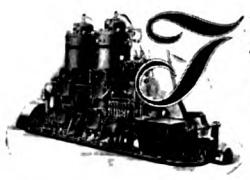

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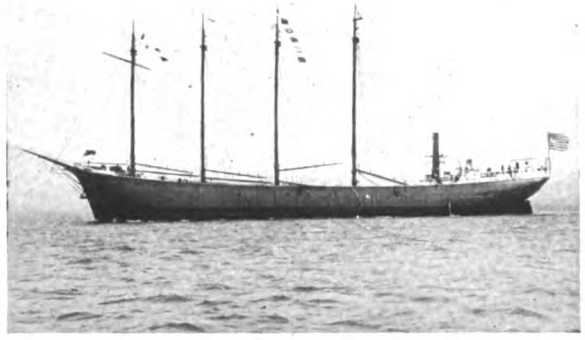

Chas. R. McCormick Schooner "S. I. Allard"
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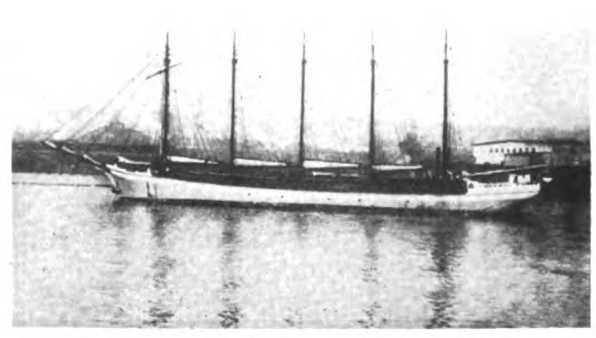

Chas. R. McCormick Schooner "City of St. Helens"
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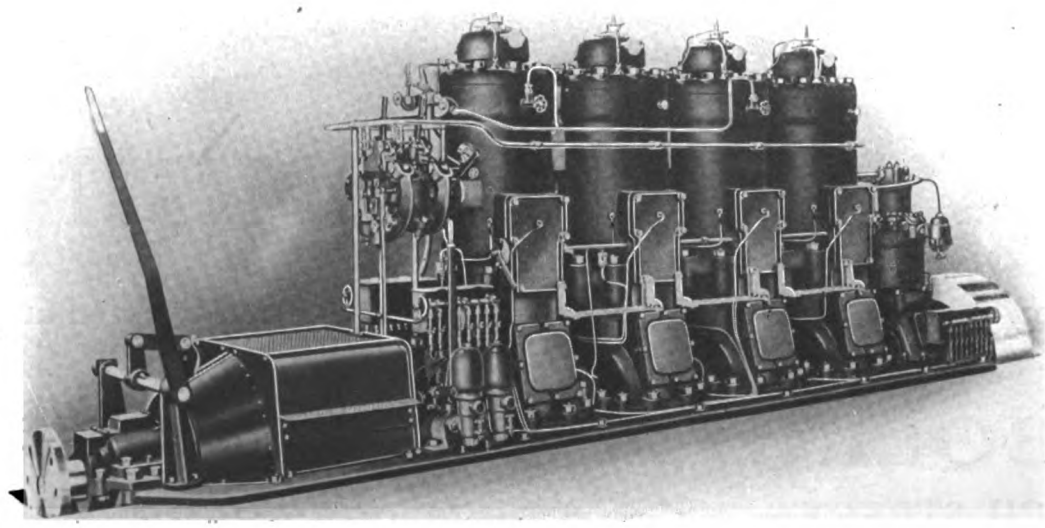

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Vacuum Oil Co.'s Tanker "Bramell Point"
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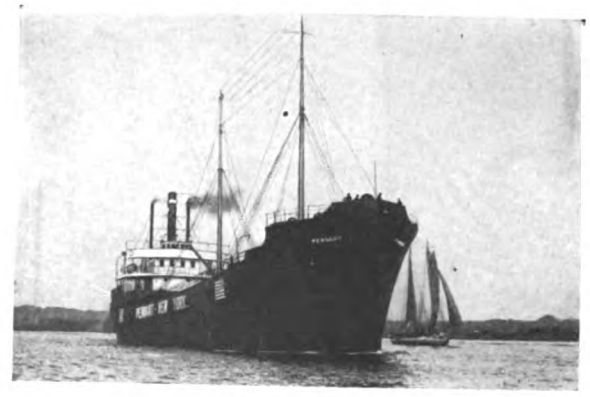
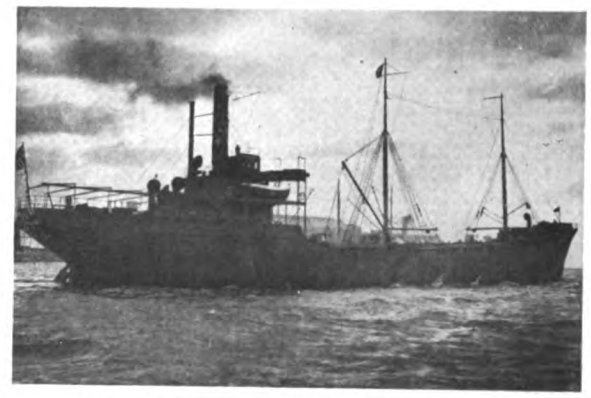
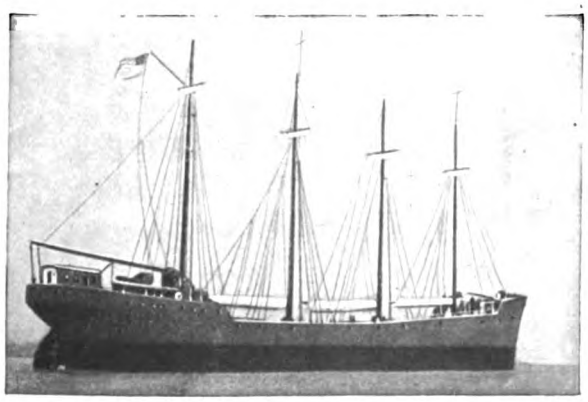


Pierce Oil Corp. Tanker "Pennant"
Fitted with 1000 B. H. P. Bolinder

Cont. Transp. & Oil Co.'s Tanker "Holden Evans"
Fitted with 1000 B. H. P. Bolinder



Sinclair Gulf Corp. Tanker "Chas. Braley"
Fitted with 1000 B. H. P. Bolinder



The Standard Oil Co.'s "Starlite" type of Schooner, one of six fitted with 320 B. H. P. Bolinder

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W. R. Grace & Co.'s Cargo Vessel "Santa Elena"

Also owners of
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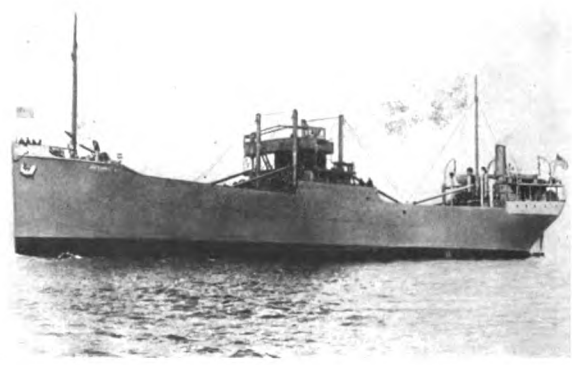
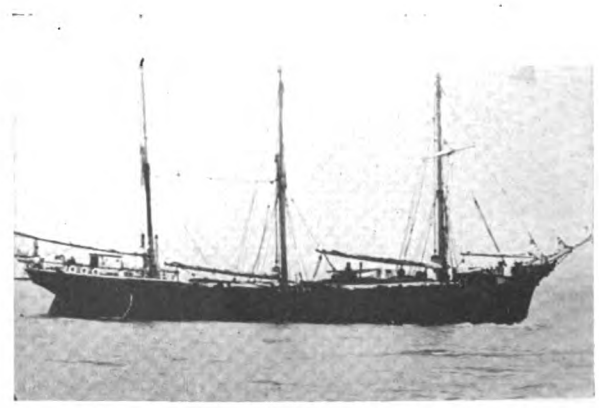
The Texas Co.'s Schooner "Maryland"
Fitted with 640 B. H. P. Bolinder

Mallory Steamship Co's Cargo Vessel "Lake Oneida"
Fitted with 640 B. H. P. Bolinder



Clyde Steamship Co.'s Cargo Vessel "Lake Mohonk"
Fitted with 640 B. H. P. Bolinder

The Matson Navigation Co.'s Schooner "Annie Johnson"
Fitted with 320 B.H.P. Bolinder



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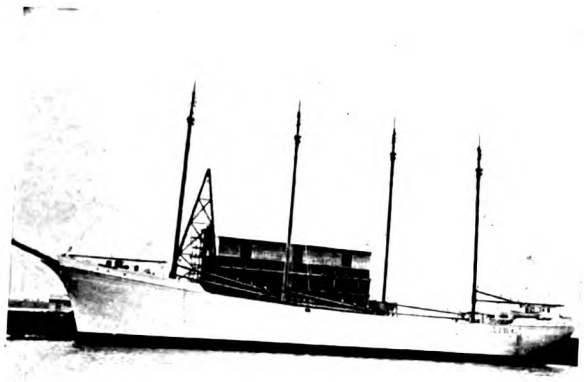

McEachern Ship Co.'s Aux. S. "Astri I"
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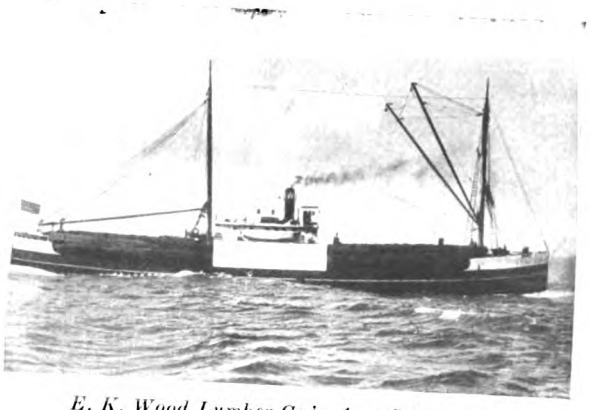
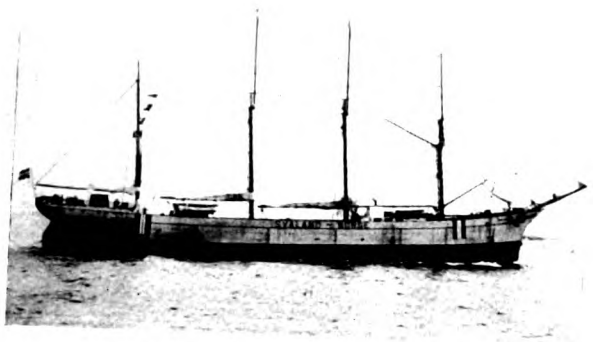
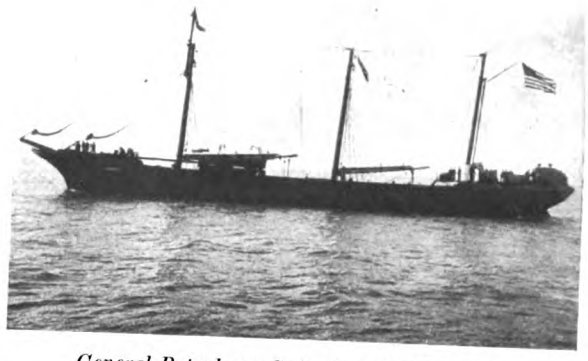


E. K. Wood Lumber Co.'s Aux. S. "Sierra"
Fitted with 640 B. H. P. Bolinder



S. O. Stray Co.'s Aux. S. "Svaland"
Fitted with 640 B. H. P. Bolinder



General Petroleum Co.'s Aux. S. "Nuuanu"
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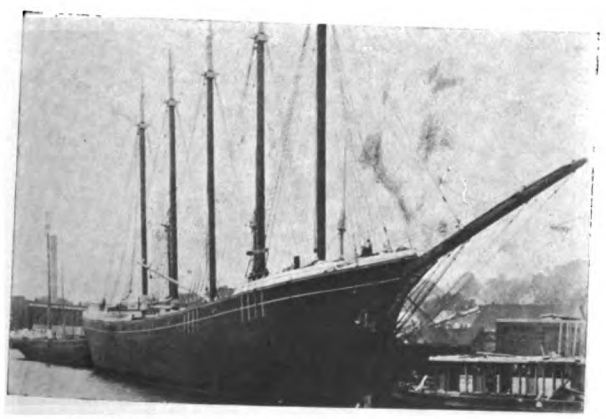

Pendleton Bros. Aux. S. "Virginia Pendleton"
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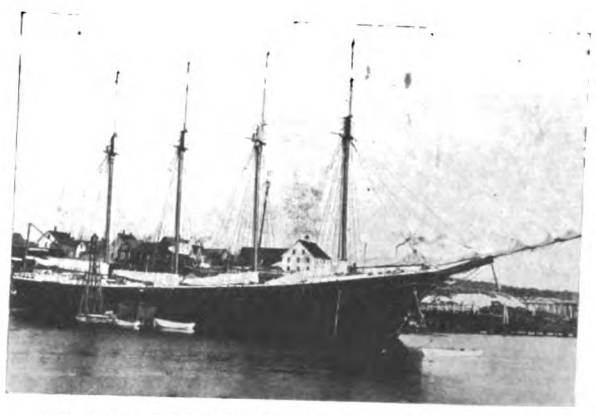

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W. & S. Job & Co.'s Aux. S. "Madeleine Constance"
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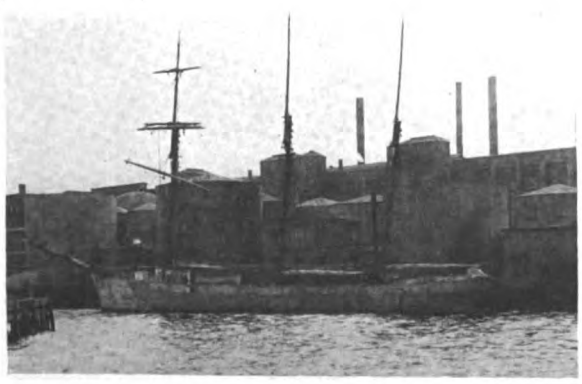

W. & S. Job & Co.'s Aux. S. "Alembic"
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Hanlon Dry Dock Co.'s Tug "Marie L. Hanlon"
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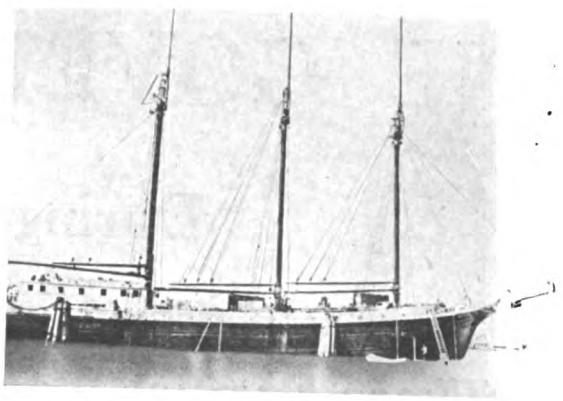
Arctic Vessel "Great Bear"
Fitted with 160 *B. H. P. Bolinder*

Another Arctic vessel building for Capt. Robert Bartlett to be equipped with 160 B. H. P. Bolinder.

Panama Passenger Boat "Sinu"
Fitted with 100 *B. H. P. Bolinder*

Bar Pilots San Francisco "Gracie S"
Fitted with 120 *B. H. P. Bolinder*



George W. McNear Co.'s Aux. S. "Ozmo"
Fitted with 320 *B. H. P. Bolinder*

The disadvantage to a sailing vessel WITHOUT Bolinder Engine.
"Manga Reva" being towed by Bolinder engined tug "Marie L. Hanlon."

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BOLINDERS

BETWEEN

200 and 300

BOLINDER

MARINE HEAVY-OIL ENGINES

(MOSTLY OF 320 B.H.P. EACH)

HAVE BEEN SUPPLIED TO

ONE GOVERNMENT ALONE

During Recent Years

These Engines Now Are Giving Most Valuable and Consistent Services

---

We have at our disposal a large number of Bolinder marine and stationary oil-engines of various sizes up to 500 b.h.p. for installation in all classes of vessels. These engines can give American ship owners the same good services

---

Would you like our Catalogue?

BOLINDER'S COMPANY

30 CHURCH STREET NEW YORK, N. Y., U. S. A.

Pacific Coast Representatives: Henry Lund & Co., Marine Building, San Francisco, Calif.

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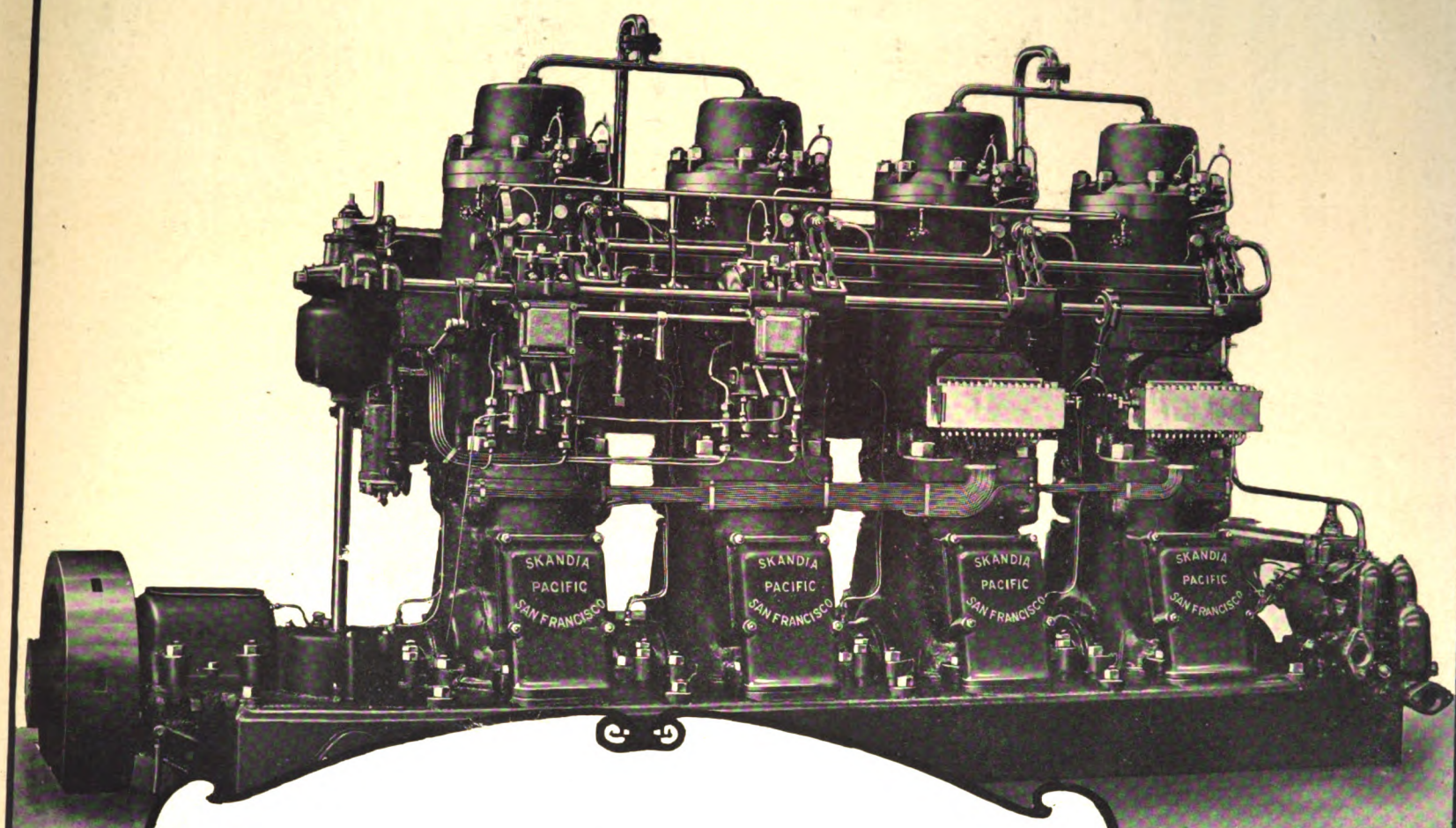

Correct Lubrication
FOR DIESEL and SEMI-DIESEL ENGINES

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surface Ignition, Semi-Diesel, or Diesel type—use

CALOL DIESEL ENGINE OIL OR CALOL DIESEL ENGINE OIL HEAVY

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service. At points named below and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

CORRECT FUEL FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil. Fuel Oil for Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
FOR DIESEL and SEMI-DIESEL ENGINES

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

RICHMOND, CALIF.
SEATTLE, WASH.
PORTLAND (WILLBRIDGE), ORE.
HONOLULU, T. H.

By barge at:

SEATTLE, WASH.
SAN FRANCISCO, CALIF.

STANDARD OIL COMPANY
(California)

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MIDWEST ENGINE COMPANY

SUCCESSORS
TO
LYONS ATLAS COMPANY
Indianapolis, Indiana
AND
HILL PUMP COMPANY
Anderson, Indiana

100 BHP Midwest Heavy-Oil Engine, Type VDV

FOUR-CYCLE
25, 50, 75 and 100 BHP Sizes—1, 2, 3 and 4 Cylinders

Ideal Power for Small Commercial Craft and for Marine Auxiliaries

Ignition Solely by the Heat of Compression, without Air-injection, Magneto, Spark-Plug, Electric-System, Hot-Bulb, Tube, Ball, Plate, or other Heated Metallic Surface

No Carburetor or High Pressure Air Compressor

ALSO BUILDERS OF
MIDWEST and WERK-SPOOR
MARINE DIESEL ENGINES

INDIANAPOLIS, INDIANA, U.S.A.

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BOLINDER'S

550,000 B. H. P. of Bolinder's Engines Now in Use in All Parts of the World

Present Sales and Yearly Output 100,000 B.H.P.

M.S. SANTA ISABEL.

Description of voyage #1 - Santa Isabel:
1 Sailed San Francisco Jan 25 - Arrived Seattle Jan 31 -
2 Sailed Seattle Feb 6 - Arrived San Francisco Feb 10 -
3 Sailed San Fran. Feb 14 - Arrived San Pedro Feb 16 -
4 Sailed San Pedro Feb 27 - Arrived Amapala Mar 12 -
5 Sailed Amapala Mar 14 - Arrived Acajutla Mar 15 -
6 Sailed Acajutla Mar 15 - Arrived Payta March 23 -
7 Sailed Payta Mar 23 - Arrived Talara Bay Mar 24 -
8 Sailed Talara Bay Mar. 27 - Arrived Eten March 28 -
9 Sailed Eten March 30 - Arrived Salaverry Mar 31.
10 Sailed Salaverry Mar 31 - Arrived Samanco April 1 -
11 Sailed Samanco April 1 - Arrived Callao April 2 -
12 Sailed Callao April 4 - Arrived Mollendo April 7 -
13 Sailed Mollendo April 8 - Arrived Arica April 9 -
14 Sailed Arica April 9 - Arrived Iquique April 10 -
15 Sailed Iquique April 11 - Arrived Antofagasta April 12 -
16 Sailed Antofagasta April 13 - Arrived Coquimbo April 14 -
17 Sailed Coquimbo April 16 - Arrived Valparaiso April 18

- Return Voyage via New York -

18 Sailed Valparaiso April 19 - Arrived Antofagasta April 23
19 Sailed Antofagasta April 25 Arrived Arica April 27
20 Sailed Arica April 27 Arrived Balboa C.Z. May 9 -
Entered canal May 10 - Left canal May 10 - 3:20 P.M.
21 Sailed Cristobal May 10 - Arrived New York May 23d

Detentions at sea - none Detentions in port. At San Pedro, Cal, discharged cargo and dry-docked to repair outboard shaft coupling Time lost 115 days
Detentions at any port account of repairs to Engines or cargo hoisting machinery. None
Distance covered - 13 850 Miles.
Time consumed Four months - or 120 days.

C B DeBernardi
-Chief Eng. off.

The log pictured herewith is from an average voyage of one of 4 sister motorships all equipped with twin sets, 320 B. H. P. Bolinder Fuel Oil Engines and emphasizes the well-established reputation of the Bolinder Engine.

ENGINED WITH TWIN SET OF 320 B. H. P. "BOLINDER" MARINE FUEL-OIL ENGINES.

Present U. S. A. Bolinder Installations 55,000 B.H.P.

Craft under construction and to be fitted with "BOLINDER" Engines in the United States alone aggregate over 145,000 tons; "BOLINDER" Engines now in service, over 12,500

The BOLINDER

THE ENGINE THAT IS NOT A DIESEL
THE ENGINE THAT IS NOT A SEMI-DIESEL
THE ENGINE THAT IS THE BOLINDER
THE STANDARD FOR SURFACE-IGNITION FUEL OIL ENGINES

An example of the ruggedness of the "BOLINDER" Engine was displayed in the case of the M. S. "ASTRI" recently. This vessel encountered a hurricane off Mazatlan and became severely strained, resulting in the flooding of the engine room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

HENRY LUND & CO., Marine Building San Francisco CALIFORNIA

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BOLINDERS

BETWEEN

200 and 300

BOLINDER

MARINE HEAVY-OIL ENGINES

(MOSTLY OF 320 B.H.P. EACH)

HAVE BEEN SUPPLIED TO

ONE GOVERNMENT ALONE

During Recent Years

These Engines Now Are Giving Most Valuable and Consistent Services

---

We have at our disposal a large number of Bolinder marine and stationary oil-engines of various sizes up to 500 b.h.p. for installation in all classes of vessels. These engines can give American ship owners the same good services

---

Would you like our Catalogue?

BOLINDER'S COMPANY

30 CHURCH STREET **NEW YORK, N. Y., U. S. A.**

Pacific Coast Representatives: Henry Lund & Co., Marine Building, San Francisco, Calif.

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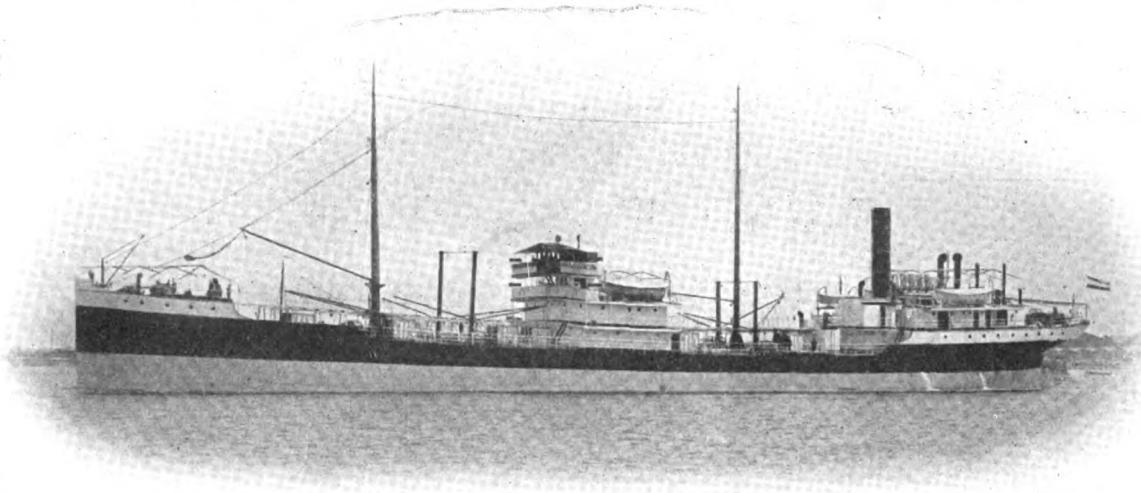
OIL FUEL

THE FUEL OF THE 20th CENTURY

The Asiatic Petroleum Co., Ltd.

are prepared to Supply OIL FUEL at

Adelaide
Alexandria
Balik Pappan
Bangkok
Batavia
Bombay
Calcutta
Cape Town
Colombo
Curacoa
Hong Kong
Karachi
Lisbon (completed)
Madras
Melbourne
Montreal
Nagasaki
Palembang
Panama Canal (both ends) (completed)
Pangkalan Berandan
Penang
Portland Oregon, S. S. A. (building)
Port Said
Puloe Samboe
Rotterdam
Sabang
Saitozaki
San Francisco
San Pedro
Seattle, Washington, U. S. A. (building)
Shanghai
Singapore
Soerabaya
Suez
Sydney
Tampico
Tarakan
Thameshaven
Vancouver (building)



ONE OF OUR FLEET OF OIL-CARRYING DIESEL-ENGINED MOTORSHIPS

Note.—During the war it is not possible to keep stocks at some of the above-named ports. It is therefore advisable for intending buyers to enquire whether stocks are available.

Buyers desiring information regarding supplies of and prices for **OIL FUEL** for use in Internal-combustion Engines or for other purposes should apply to **THE ASIATIC PETROLEUM COMPANY, LIMITED**, at the above address.

The Asiatic Petroleum Company also supply **KEROSENE OIL** for use in the smaller Internal-combustion Engines and are prepared to supply **PETROLEUM SPIRITS, LUBRICATING OILS, WAX** and **GREASES** in all far Eastern Markets.

THE ASIATIC PETROLEUM CO., LTD.

ST. HELEN'S COURT, GREAT ST. HELENS
LONDON, E. C., ENGLAND

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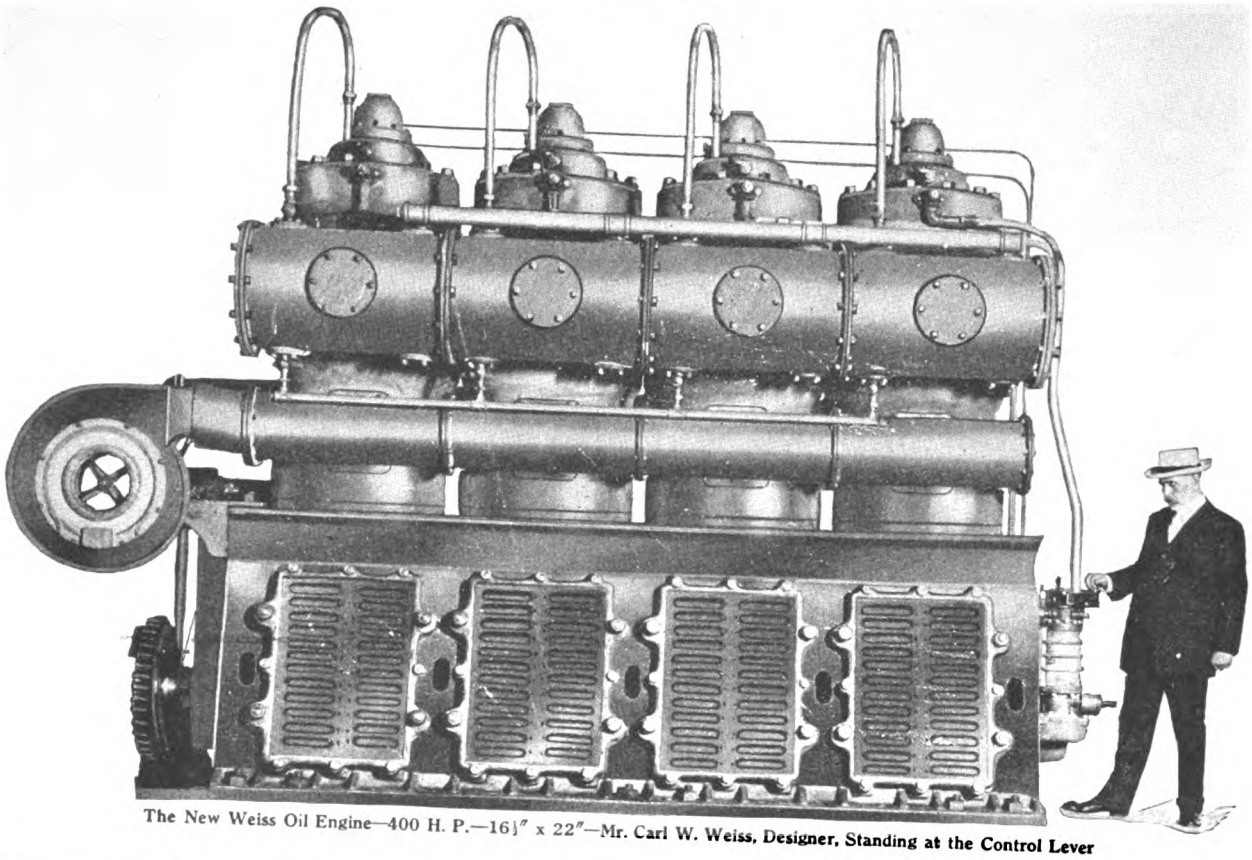
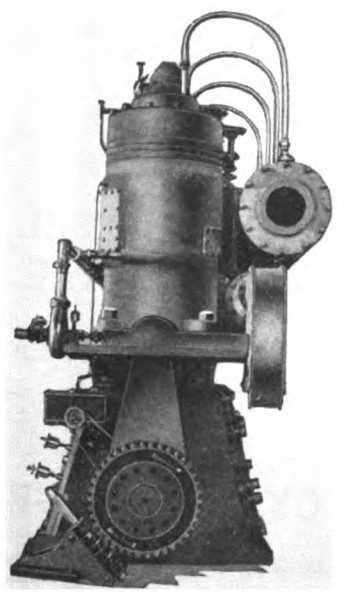
WEISS OIL ENGINES



The New Weiss Oil Engine—400 H. P.—16½″ x 22″—Mr. Carl W. Weiss, Designer, Standing at the Control Lever

CARL W. WEISS ANNOUNCES

The New Weiss Engine embodying improvements demarking an epoch in oil engine design. The engine illustrated above is one of the first of the new type to come through production.



The whole range of surface-ignition, medium-compression, two-cycle engines, sometimes referred to as "Semi-Diesel" but more appropriately termed "Weiss-Type," dates from, and are imitations or developments of the first practical engine of this class designed, built and patented in **1894** by Carl W. Weiss.

During the twenty-two years following, Mr. Weiss designed and supervised the construction of approximately 300,000 H. P. kerosene and heavy oil engines marketed as "Mietz & Weiss" engines.

From 1916 to 1918 he was engaged in laboratory work, as a result of which Mr. Weiss has developed the New Weiss Engine now announced, a full technical description of which will gladly be mailed upon request.

WEISS ENGINE COMPANY, 17 Battery Place, NEW YORK

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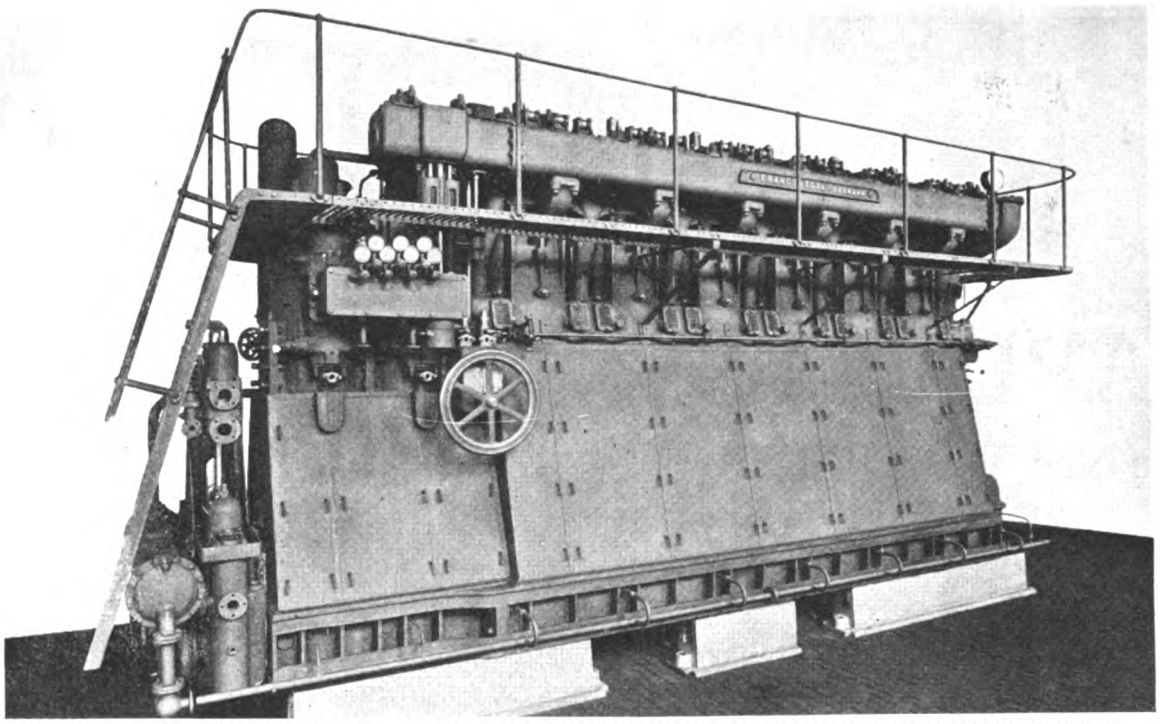
FRANCO TOSI
HEAVY
· OIL ENGINES ·

DIESEL ENGINES FOR DECK AND ENGINE-ROOM AUXILIARY PLANTS ON MERCANTILE AND NAVAL SHIPS.

AUXILIARY PROPELLING MACHINERY FOR SAILING-VESSELS.



The six-cylinder 600 b.h.p. Tosi four-cycle, direct-reversible Diesel-type merchant marine heavy-oil engine

FOUR AND TWO CYCLE CROSS-HEAD MARINE DIESEL ENGINES OF THE HEAVY-DUTY MERCHANT MARINE TYPE.

HIGH-SPEED DIESEL ENGINES FOR FAST NAVAL SURFACE-CRAFTS, AND SUBMARINES.

MORE THAN 100,000 B. H. P. IN USE ON 1200 CYLINDERS UP TO 400 B. H. P. PER CYLINDER.

LEGNANO, ITALY.

NEW YORK OFFICE 82 WALL STREET

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Important Announcement

BY THE

Franco Tosi Company

LEGNANO, ITALY

(CAPITAL: Sixty-Four Million Lire. FULLY PAID)

To Responsible American Engineering Companies:

Having perfected a Diesel-type crude-oil marine engine,—the reliability and correct design of which has been demonstrated and proved by continuous successful services in many Italian merchant and naval ships, and in large ocean-going submarines,—the well-known firm of Franco Tosi are prepared to grant in America one (or more)

Marine Constructional License

In view of the strong Federal encouragement recently given to Motorship marine Diesel engine construction (from well recognized designs only), the present is the most opportune time to acquire a Tosi license. Every indication tends to show that very shortly hundreds of Diesel-driven ships are bound to be built in the United States if the new merchant fleet is ever to become a factor in over-seas trade; in competition with the rapidly increasing numbers of European Diesel ships already regularly plying to these shores, the adoption of an early and aggressive constructive policy becomes a matter of economic necessity.

Favorable comments on the Tosi marine-engine have been expressed by the U. S. Shipping Board Emergency Fleet Corporation officials. Many stationary types Diesel engines of the Tosi designs and of American construction brought out here during the last 5 years are in regular operation all over the United States; the manufacturing experiences gained on these engines have been fully utilized in the marine types so that the Tosi engine is well adapted to American shop ideas and ship practice.

Complete working drawings of these engines in 4 sizes are now in the United States.

Competent specialized representatives from the Tosi works may be seen at their New York office, 82 Wall Street, and all details in regard to the construction as well as terms obtained there. A general description and illustrations of one type of the Tosi merchant-marine engine appeared in the last issue of "Motorship," a description of their larger type may appear in an early issue, and details of the submarine engine were published in the March issue of the same journal.

FRANCO TOSI CO., 82 Wall Street NEW YORK

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SHARE CAPITAL

500 MILLIONS OF LIRE (Fully Paid)

Societa Anonima Italiana

GIO. ANSALDO & CO.

Registered Office, Rome

Administrative and Industrial Office, Genoa, Italy

THE GIO. ANSALDO & C. WORKS, founded by the PRIME MINISTER CAVOUR in 1853 under the Direction of the distinguished engineer, GIOVANNI ANSALDO, had, especially under the subsequent Management and Direction of the Bombrini Brothers, a prosperous career, during which the manufacture was extended from early Locomotives to Marine Engines and to Shipbuilding and other Naval Work. The greatest impulse, however, was given by the late Comm. Ferdinando Maria Perrone in 1904, when the Firm was transformed into the present LIMITED SOCIETY to attain wider scope, which has now been fully realized by his Sons. The original WORKS OF SAMPIERDARENA and the SHIPYARD OF SESTRI PONENTE have recently been greatly enlarged and augmented by other ESTABLISHMENTS and associated CONCERNS, devoted not only to mercantile and Naval Shipbuilding in all its branches, but also to armour plate, guns, and war material of all kinds.

The SOCIETY has at present at work, in its own 28 ESTABLISHMENTS and other associated CONCERNS as hereunder enumerated, about 50,000 hands, men and women, and is capable of building and is building:—

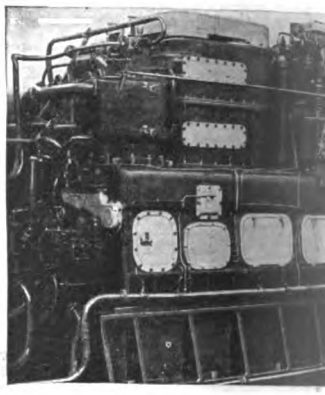
1st—Warships and mercantile vessels of all kinds and sizes from big Super-dreadnoughts and ocean liners to destroyers, torpedo boats, submarines, cargo steamers, tug boats, motor boats, etc.
2nd—Diesel marine oil engines up to 2,000 b. h. p., also marine steam propelling engines, both reciprocating and turbine engines with and without gearing.
3rd—Steam boilers, both water-tube and cylindrical, of all types and sizes.
4th—Locomotives and tenders complete, and Machine Tools.
5th—Armour plates, guns, armoured turrets complete, ammunition complete, metallic cartridges and casings.
6th—Auxiliaries for propelling machinery, and all kinds of auxiliary machinery for ships, such as steering gears, capstans, winches, distilling condensers, and screw propellers.
7th—Dynamos and all electric appliances, auxiliary electric machinery both for ship and land service, electric gear for turrets and guns, elevators, steering gears, electric capstans and winches, cranes and electric propelling machinery.
8th—Aeroplanes and their motors.
9th—Steel, cast iron and bronze castings of all varieties and sizes.
10th—Steel forgings of all kinds and sizes, special steels, and Files.
11th—Boiler steel tubes, steel, iron, copper and brass pipes.
12th—Furniture of all descriptions, both wood and metallic, for warships, liners and mercantile vessels.

List of Establishments

1.—General Engineering Works	SAMPIERDARENA
2.—Locomotive Construction Works	SAMPIERDARENA
3.—Artillery and Big Gun Works	SAMPIERDARENA
4.—War Munition Works	SAMPIERDARENA
5.—Aeroplane Motor Works, San Martino	SAMPIERDARENA
6.—Cast Steel Foundry	CORNIGLIANO LIGURE
7.—Armour Plates and Forging Plant	CORNIGLIANO LIGURE
8.—Oxygen and Hydrogen Production Plant	CORNIGLIANO LIGURE
9.—New Artillery and Big Gun Works	CORNIGLIANO LIGURE
10.—Electric Products Plant	CORNIGLIANO LIGURE
11.—Bronze Foundry	CORNIGLIANO LIGURE
12.—Delta Metal and Alloys Foundry	CORNIGLIANO LIGURE
13.—Brass Cartridge Works	CORNIGLIANO LIGURE
14.—Internal-Combustion Engine Works	CORNIGLIANO LIGURE
15.—Aeroplane Works No. 1 (Marine Hangars)	BORZOLI (Mare)
16.—Aeroplane Works No. 2	BOLZANETO
17.—Aeroplane Works No. 3	TORINO (Corso Peschiera 251)
18.—Tube Mills	FEGINO (Val Polcevera)
19.—Projectile-Case Works	FEGINO
20.—Naval Shipyard	SESTRI PONENTE
21.—Saw Mill and Boat Yards	VOLTRI
22.—Ammunition Works	SESTRI PONENTE
23.—Cast Iron Foundry	PEGLI
24.—Fire Brick Plant	STAZZANO (Serravalle Scrivia)
25.—Genoa Shipyards	MOLOGIANO (Porto di Genova)
26.—Iron Mines	COGNE (Valle d'Aosta)
27.—Electric Furnaces for Steel and Pig Iron and Rolling Mill	AOSTA
28.—Special Alloys Plant	AOSTA

Associated Concerns

1.—Shipyard and Works, Savoia	CORNIGLIANO LIGURE
2.—Shipyard and Works, Fiat San Giorgio	SPEZIA
3.—Internal-combustion Engine Works, Fiat San Giogio	TORINO
4.—Ore Mines	COGNE (Val d'Aosta).
5.—Italian National S.S. Company	GENOVA
6.—Lignite Mines	GROSSETO (Tuscany).
7.—Cerpelli's Centrifugal and Turbine Pump Works	LA SPEZIA
8.—Westinghouse Company	VADO LIGURY
9.—Magnesite Mines	QUAREIDUELLO (Tuscany)
10.—Insulators Company	LEGHOURN



FIAT-SAN GIORGIO HIGH S

THE ANSALDO-BUILT BATTL
THE ROYAL I

SUBMARINE "FI

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each

Now Building at Sestri Ponente

American Branch: 80 Ma

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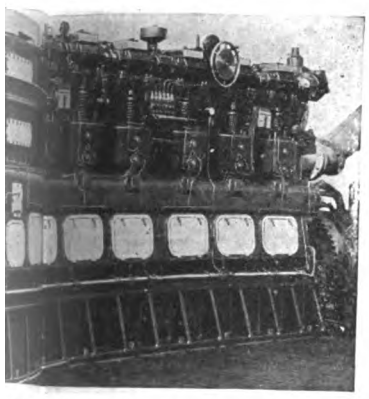

GIORGIO HIGH-SPEED MOTOR, 1350 B. H. P.

BATTLESHIP "GULIO CESARE" OF ITALIAN NAVY

FIAT-SAN GIORGIO"

SHARE CAPITAL
22 MILLIONS OF LIRE (Fully Paid)

ANSALDO-SAN-GIORGIO

(LIMITED)

Ex Fiat-San-Giorgio

Shipyard, Muggiano (Spezia)
Offices and Engine Works, Turin, via Cuneo, 20, Italy

Specialists in the construction of

Diesel and Steam Cargo Vessels, Torpedo Boats, Submarines Diesel-Engined Submarine Chasers and Heavy-Oil Marine Motors

(Type Fiat-San Giorgio)

such as were supplied to the Navies of

Brazil, Denmark, Great Britian, Italy, Portugal, Spain, Russia, Japan, United States and Sweden, and Germany (before the war)

Complete Construction of War and Merchant Ships. Cargo and Passenger Vessels of any Capacity. Ships equipped and repaired.

Heavy-Oil Marine Motors, type Fiat-San Giorgio, for War and Merchant Ships of any capacity.

The Fiat-San Giorgio plants, which now show a continuous industrial development, will employ from 18,000 to 20,000 workingmen during the current year.

The Italian Emergency Fleet

The Spezia Shipyard every year will launch not less than 18 standardized Diesel Motorships of 8,100 to 10,000 tons D. W. capacity each, with complete equipment and machinery built by the FIAT-SAN GIORGIO exclusively, while the output of submarines and torpedo-boats will remain undiminished.

Guaranteed Results for Merchant Ship Motors (Model 2 cy.—175=1200 b. h. p.)

—Reversing Motors from full ahead to full astern done in ten seconds.

—Fuel Consumption two-cycle engines, 0.45 lbs. heavy oil, high density containing up to 20% Pitchy and Tarry Matters.

—Lubricating Oil Consumption 0.017 lbs.

den Lane, New York City

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each

Now Building at Muggiano (Spezia)

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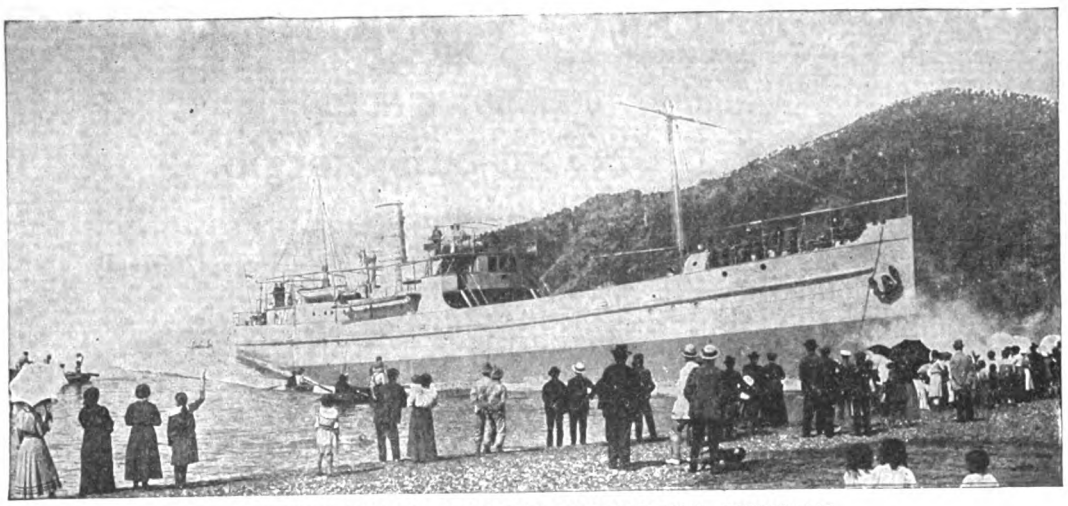

MOTOR-DRIVEN OIL TANKER LAUNCHED 100% COMPLETE

Photo. Societa Escercizio Bacini

Hudson Launching Greases

enable shipbuilders to complete their effort by a successful launching.

HUDSON LAUNCHING GREASES are as essential to the launching ways, as are the ways to the vessel.

LUBRICATION COSTS are not an expense. Rather do they make for economy and efficiency and should be carefully studied.

OUR FACILITIES enable us to provide prompt delivery of all requirements.

INFORMATION will be furnished on request as to best means of preparing ways and essential lubricants for launchings.

Lubrication An Important Factor

Internal-combustion-engines, marine-engines, and machinery must of necessity be well lubricated to obtain efficiency and economy in operation.

Hudson Marine Oils and Hudson Lubricants Meet These Demands

HUDSON OILS AND GREASES once used, are always used.

Write us your requirements

HUDSON OIL COMPANY, Inc.
Marine Department, 109 Broad St., New York City

Cable Address "HUDOIL" **Telephone Broad 4315-6 or Broad 5215**

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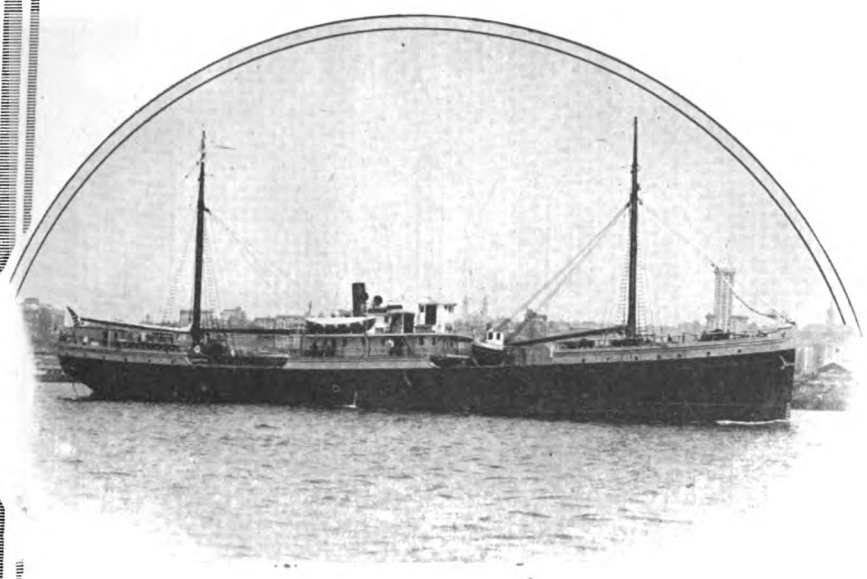


THE MOTORSHIP "LIBBY MAINE"

IN EVERY WAY A SUCCESS

Said Capt. Herre, Master of the Motorship "Libby Maine," of the performance of the Engines

The Maiden Voyage
of the
FULL-POWERED MOTORSHIP
"LIBBY MAINE"

Equipped with Two 320 b.h.p.

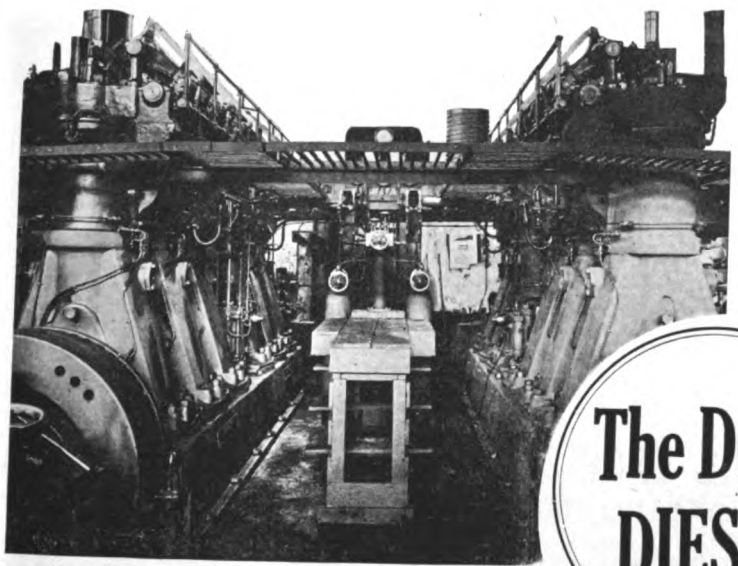
DOW FULL-DIESEL TYPE

Engines, Demonstrated that the

DOW-DIESEL

Is Economical, Thoroughly Reliable and Efficient and that

They ARE a Success



The Twin 320 B.H.P. Dow Engines of the "Libby Maine", on the test blocks, Alameda.

The DOW-DIESEL

DOW PUMP AND DIESEL ENGINE COMPANY ALAMEDA, CALIF.

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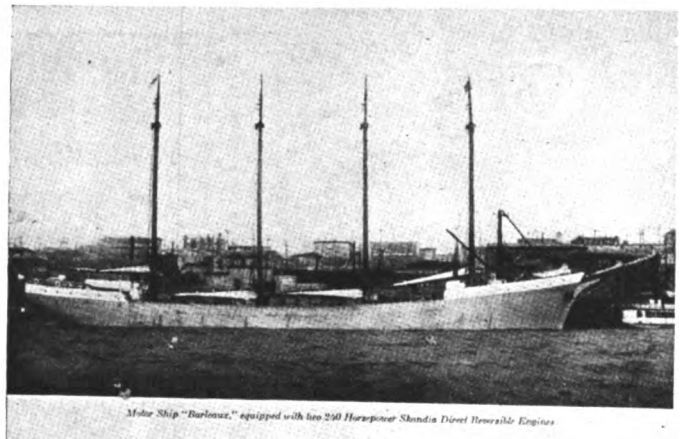
SKANDIA OIL ENGINES

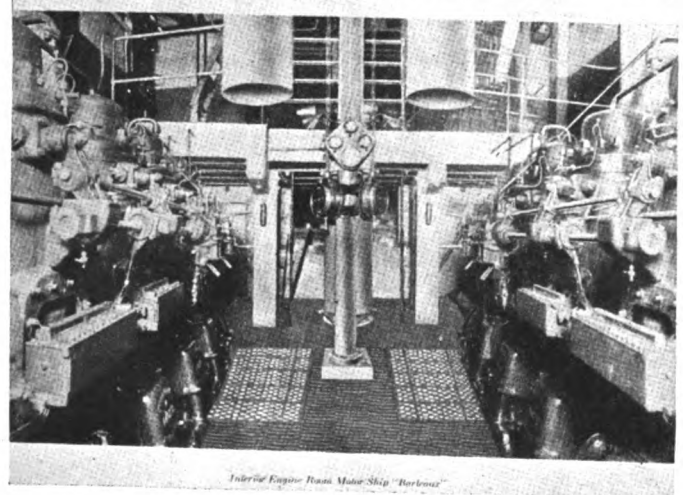
Make Compact Installations

(Marine and Stationary)

Operate on Low Gravity, Crude or Fuel Oils



Motor Ship "Barlonz," equipped with two 240 Horsepower Skandia Direct Reversible Engines



Interior Engine Room Motor Ship "Barlonz"

550,000 B.H.P. Now in Use and on Order

5 B.H.P. to 500 B.H.P.

5 B.H.P. to 500 B.H.P.

SKANDIA PACIFIC OIL ENGINE COMPANY

WORKS: OAKLAND, CALIFORNIA, U. S. A.

Northwestern Agents SKANDIA ENGINEERING CO.
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Eastern Agents H. S. JOHANNSEN
50 Church St., New York, N. Y

SKANDIA MARINE OIL ENGINES

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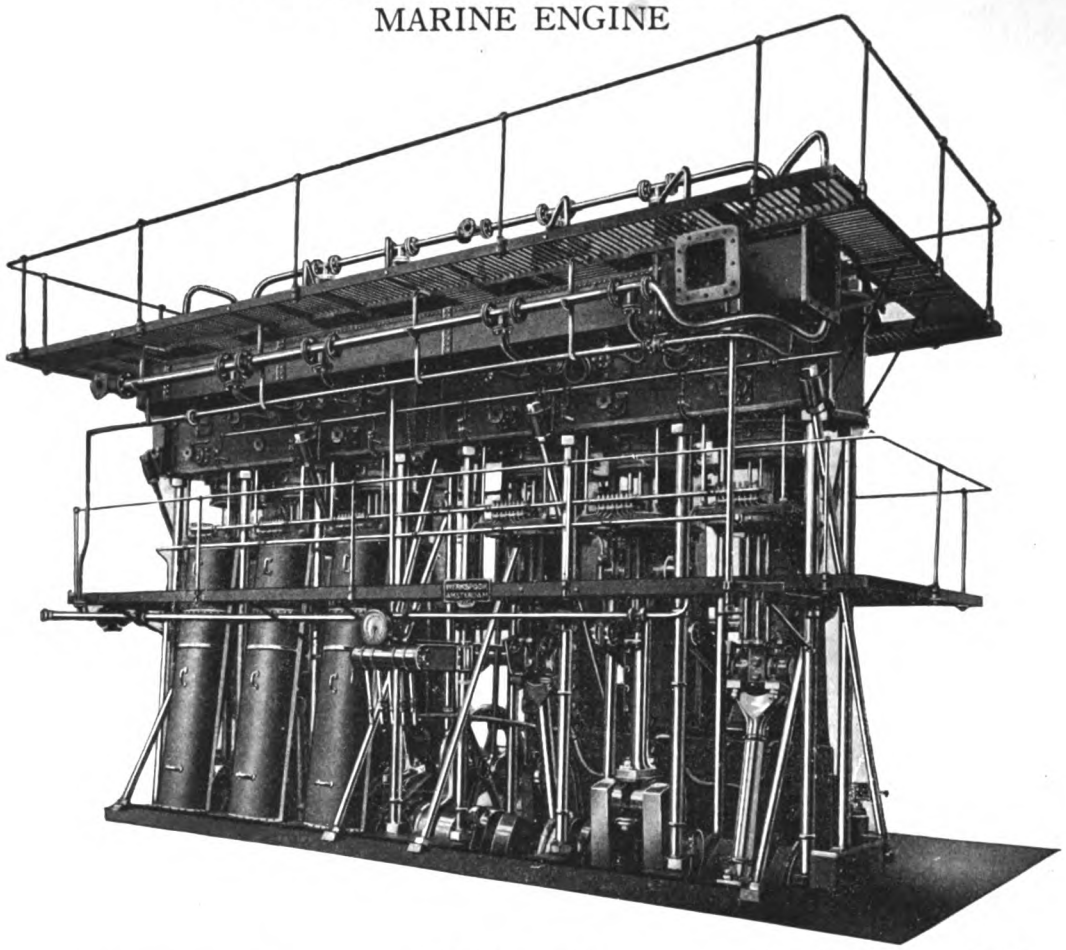
SKANDIA PACIFIC OIL ENGINE COMPANY

BUILDERS UNDER LICENSE OF THE

WERKSPOOR-DIESEL

MARINE ENGINE



RELIABILITY ECONOMY ACCESSIBILITY

Northwestern Agents
SKANDIA
ENGINEERING CO.
101 Grand Trunk Dock
Seattle, Washington

SKANDIA PACIFIC OIL ENGINE CO.
Balboa Building, San Francisco, Cal.
Works: Oakland, Cal.

Eastern Agents
H S. JOHANNSEN
50 Church Street
New York, N. Y.

WERKSPOOR MARINE ENGINES DIESEL

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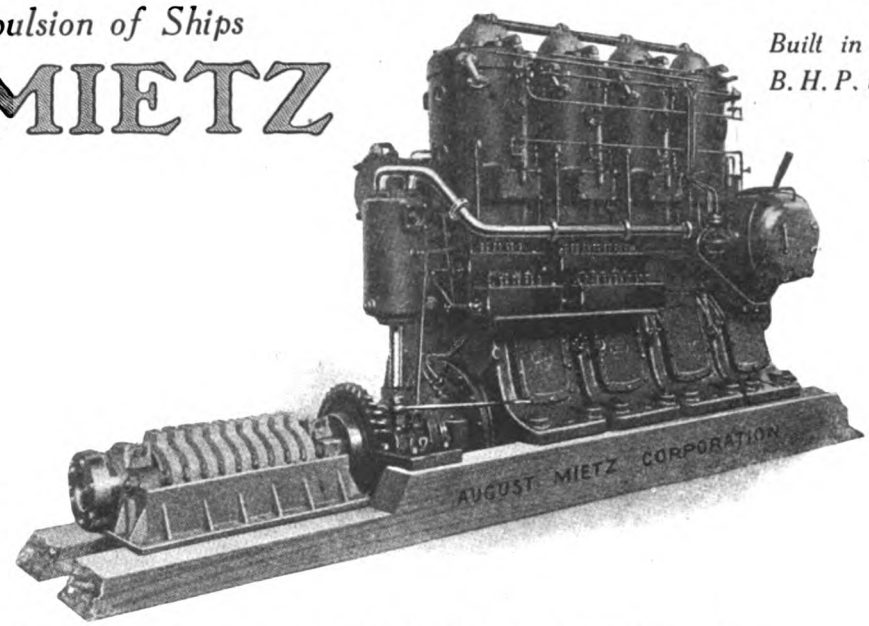
America's Pioneer Marine Oil Engine

For the Propulsion of Ships

THE MIETZ

Built in Sizes from 40 B. H. P. to 350 B. H. P.



Mietz 200 H. P. Direct Reversible Marine Oil Engine

8,200 Engines Aggregating 300,000 B. H. P. in Service
Economical Operation On Low-Priced Fuel-Oils

AUGUST MIETZ CORPORATION

138 Mott Street *New York, N. Y., U. S. A.*

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Canada	**Switzerland**	**India**	**Tahiti**	**Hawaii**
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These Subscribers are Composed of Government Officials; Ship-owning Officials; Workboat Owners; great Shipbuilding Yards; big Engineering Works; Shipowners; and Other Important Men, who Decide and make Large Purchases.

Hence MOTORSHIP Forms an Unusually Valuable Publicity Medium for Every Kind of Marine Product, Properly Displayed in its Advertising Columns.

Despite the War, with its Communication Difficulties, MOTORSHIP has Met with a Truly Remarkable World-wide Success Far Beyond the Anticipations of its Publishers. Its Circulation is Rapidly Increasing and it is fast Becoming the Most Important of all Marine Publications. What does this mean to you?

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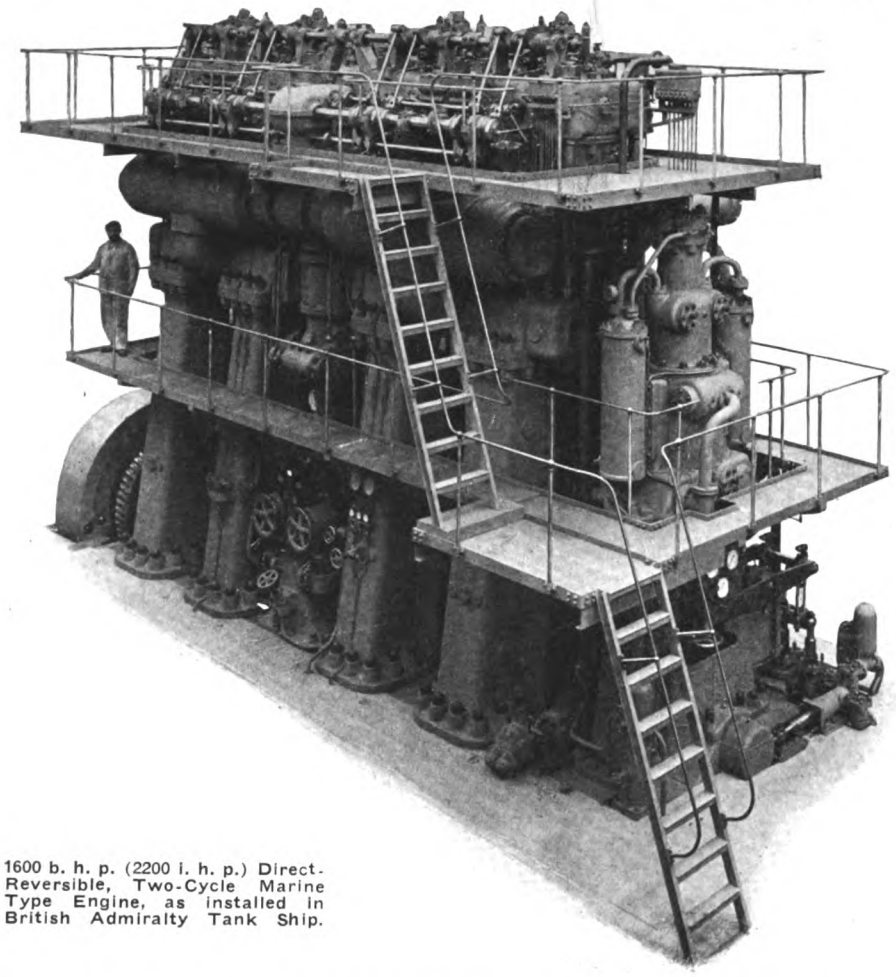
SULZER FRÈRES

SULZER TWO-CYCLE DIESEL
MERCHANT MARINE and SUBMARINE ENGINES

STANDARDIZED SIZES:
150 b. h. p. to 4,000 b. h. p. per engine
in four and six-cylinder units

TOTAL OUTPUT OF TWO-CYCLE ENGINES 255,000 B. H. P.



1600 b. h. p. (2200 i. h. p.) Direct-Reversible, Two-Cycle Marine Type Engine, as installed in British Admiralty Tank Ship.

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ST. LOUIS, MO.

Sole Owners of All Rights for Sale and Manufacture of Sulzer Diesel Engines for Installation in the U. S. A. and Its Possessions; Panama and Canada

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Steamships, Yachts, Cruisers, Steam and Gas Launches, Workboats of All Kinds and Lifeboats

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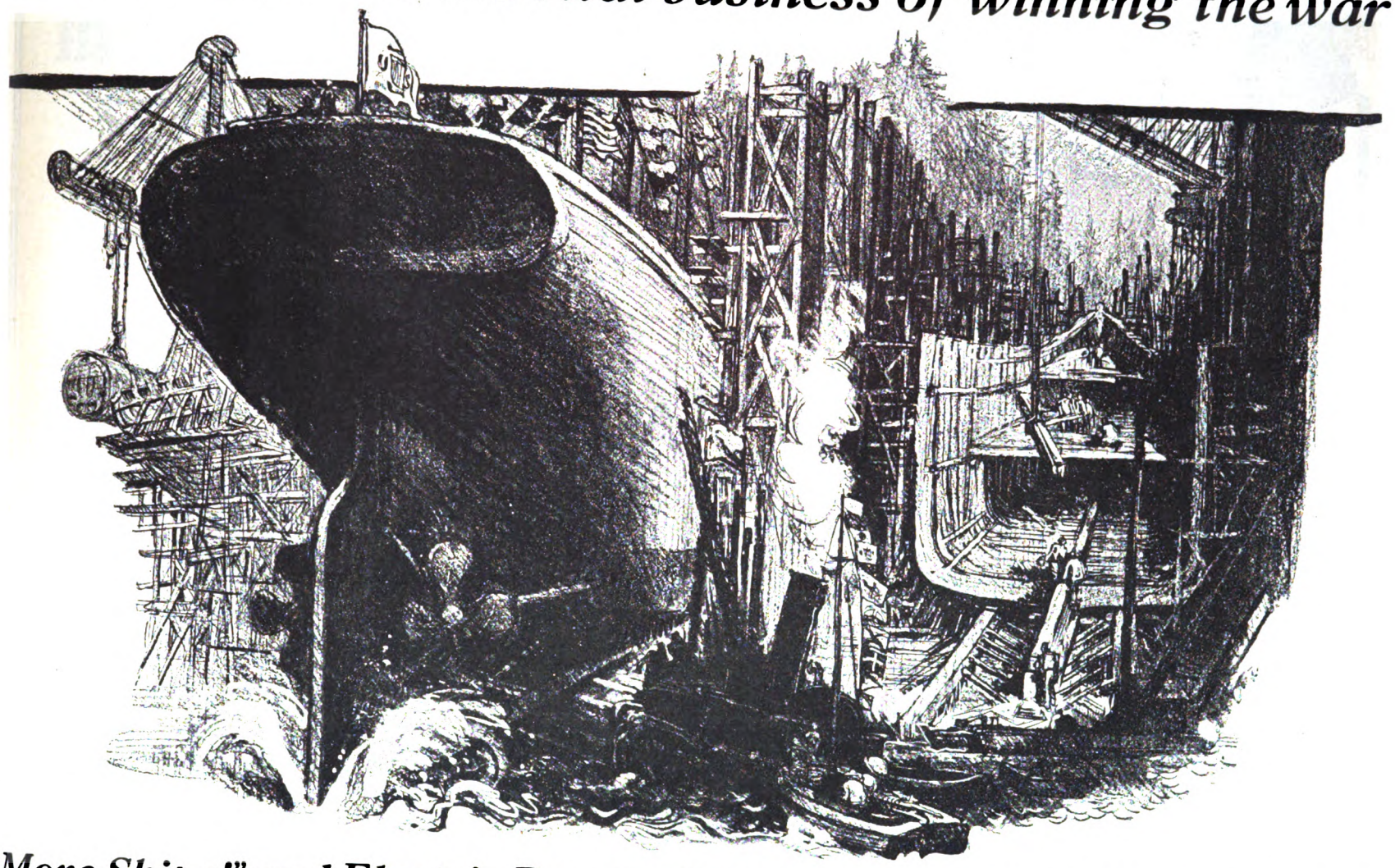
Every electrical engineering and manufacturing facility of this company is being applied "without stint or limit" to the vital business of winning the war



"More Ships!" and Electric Power shapes forests into hulls and masts

America becomes a maritime nation overnight. Shipyards have sprung up like mushrooms. It is a race against time, with every day counting. The construction of wooden ships is largely a problem of lumber and labor. Electric power responds.

Electric logging engines go into the forest's depths and bring tons of timber to railroad sidings and river. Electric log hoists and carriages, lumber stackers and conveyors, handle logs and lumber with less labor and in less time than required by old methods.

Big electric motors and controllers are despatched to the lumber mills to operate band and head saws, slashers, trimmers, edgers and planers, making new records in lumber production.

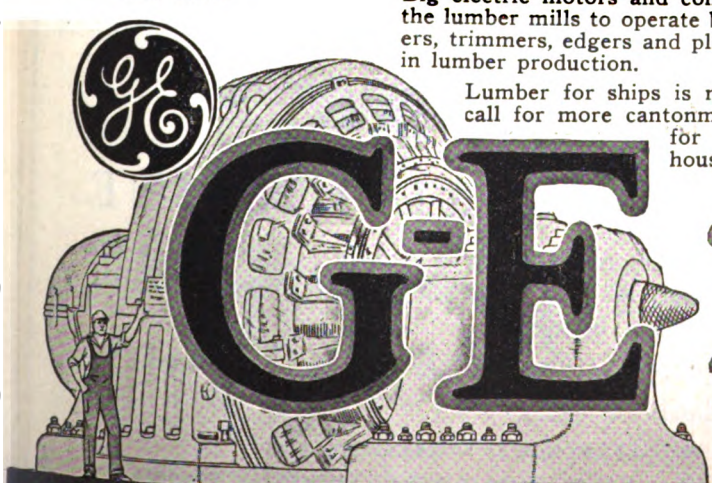
Lumber for ships is not the whole story. The call for more cantonments and barracks, spruce for aeroplanes, workmen's houses and additional shipways comes at the same time. Powerful cranes and hoists, necessary in both steel and wooden ship construction, must also have electric power equipment.

Many are the problems in control and motor application. Industrial engineers and managers place their needs before the General Electric Company, whose engineering and manufacturing facilities are broad enough and big enough to give the answer in record time, so that the great war program may not be interrupted.

It is for America's manufacturing and industrial efficiency that such an organization as the General Electric Company is maintained. It is to the interest of the country as a whole that industry avail itself of the opportunity to consult with the industrial engineers of the General Electric Company; for many a perplexing production problem can be solved by the correct application of electric power—sometimes without adding to the present electrical equipment.

Look for this—
the mark of leadership in electrical development and manufacture

43-67



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From the Mightiest to the Tiniest

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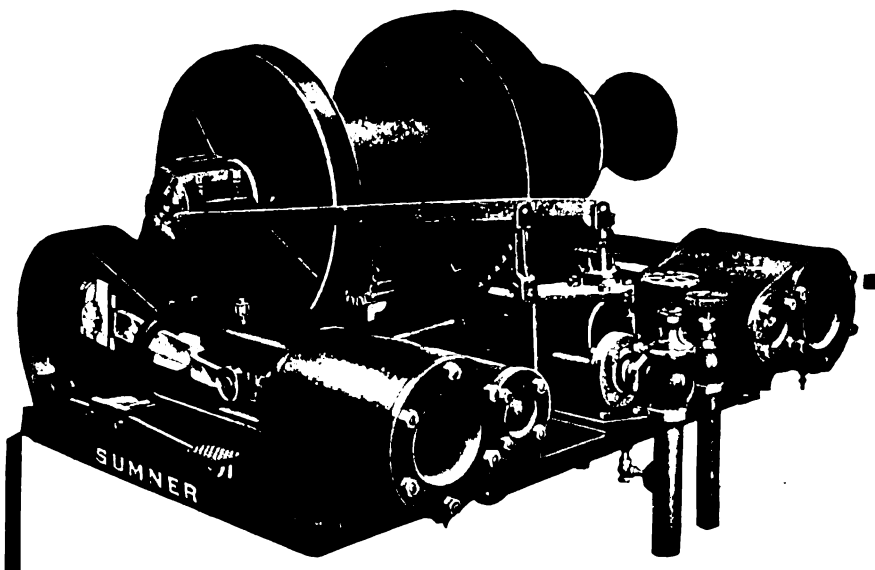

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Write us for Complete Description with Weights and Prices

SUMNER IRON WORKS

EVERETT, WASH., U. S. A.

Sumner Steam Cargo Hoist

A New Model

CYLINDERS—8"x10"; steam pipe 2"; exhaust pipe 2½"; self-draining piston valves.

MANIFOLD FOR STEAM AND EXHAUST—Is lowest part of cylinders and valves, thereby draining all condensation from exhaust.

WITH BALANCED THROTTLE VALVE—Securely bolted. Lever in any position desired.

MAIN SHAFT—Forged Steel, 4 3/16" in diameter.

EXTENDED BOX—With 13" bearing, supporting main shaft the entire distance between main gear and gypsy head.

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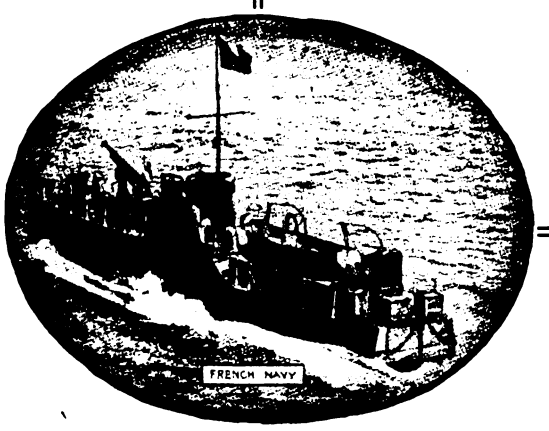
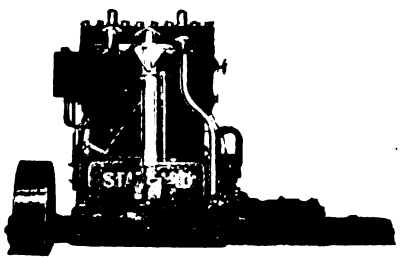
Elco-Standard 80-ft. Submarine Chaser, 22 Knots, Two 220 H. P. Standard Engines



Four stripes now distinguish



THE STANDARD ENGINE

a stripe for each year since the war began. For this is the engine in all the 80 foot and 110 foot British, French, Italian and U. S. Submarine Chasers.

The unconquered veteran of war will serve *you* well.

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Horse Power

LARGER SIZES
DESIGNED
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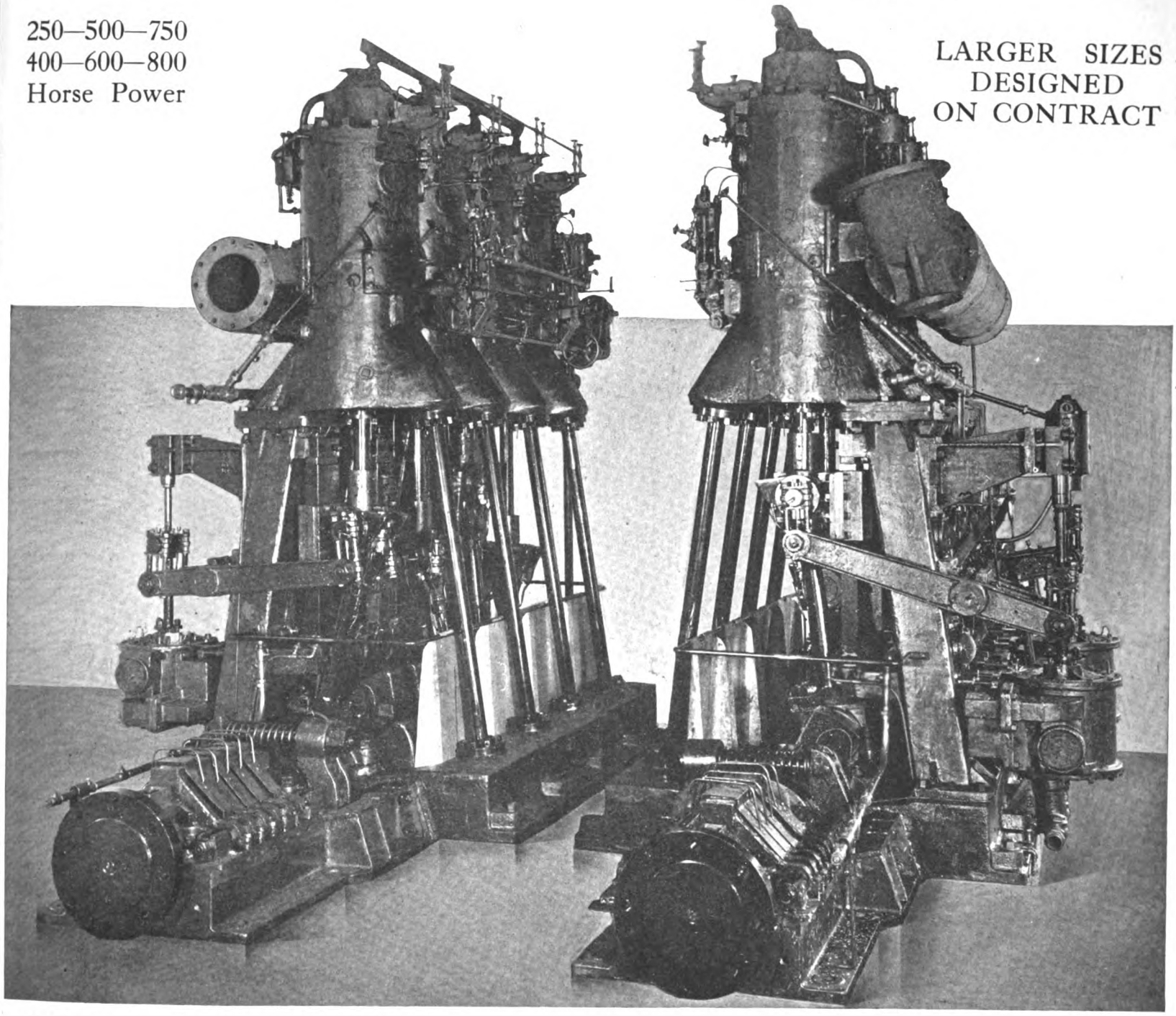

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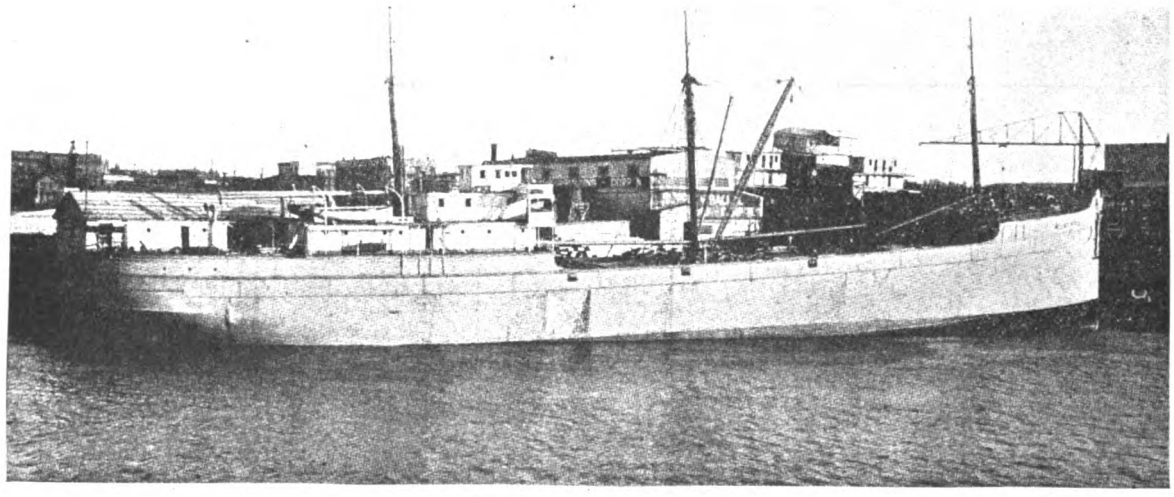
WINTON
DIESEL OIL ENGINES
for MARINE SERVICE



MOTORSHIP
MOUNT HOOD
equipped with two 500 H. P.
Winton Diesel Oil Engines.

WE ARE OFFERING DELIVERY ON 200 TO 500 H. P. SIZES

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Seattle Representative - - **H. W. STARRETT, SUNSET ENGINE COMPANY**

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NLSECO HEAVY-OIL ENGINES

ANNOUNCEMENT

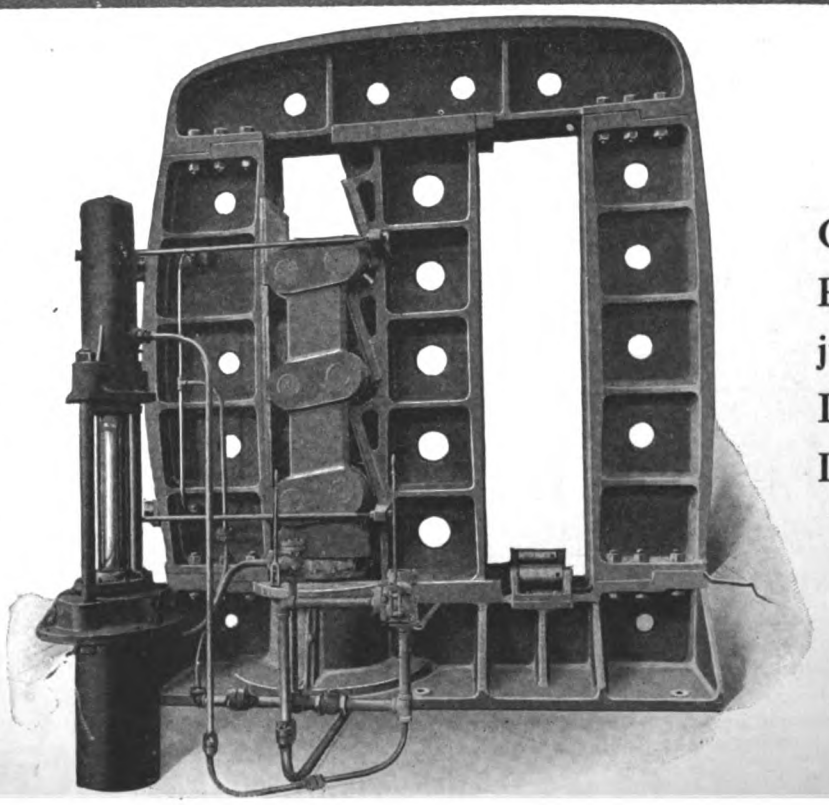
Owing to the capacity of our plant being completely occupied with the construction of Marine Diesel engines for the U. S. government, we regret we are unable to make any definite quotations to private interests during the remainder of this year. May we take your carte blanche order for delivery when conditions permit? Such deliveries will be made in strict rotation.

NEW LONDON SHIP and ENGINE CO.
Groton, Conn., U. S. A.

AMERICA'S PREMIER MARINE DIESEL MOTOR

SOUTHWARK

For Bending 12 feet of 2 inch Plate, the 1,000 Ton Bender Gives Economical Results



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NEW AMERICAN BOOK ON SHIPBUILDING

Steel Shipbuilders' Handbook

An Encyclopedia of the Names of Parts, Tools, Operations, Trades, Abbreviations, etc., used in the Building of Steel Ships

By C. W. COOK, M.A., B.S. in C.E., Associate Professor of Naval Architecture, University of Southern California.

Pocket Size, Leather, $1.50 net

For men working in shipyards, as well as for students in the numerous classes now being conducted in shipbuilding, this handbook will be invaluable. It is the result of a study of the latest and best methods in the large shipbuilding plants all over the country, and contains about 1,600 accurate American definitions, arranged alphabetically and completely cross-referenced. In the back of the book are four plates containing drawings of about 300 of the parts of ships. The size and shape make it possible to carry the book around for ready reference at all times.

PRACTICAL SHIPBUILDING

A Treatise on the Structural Design and Building of Modern Steam Vessels

By A. CAMPBELL HOLMS, *Surveyor to Lloyd's Register of Shipping. Sixth Printing. 2 Vols. Vol. I. Text. Royal 8vo.; Vol. II. 133 plates of diagrams and illustrations. Oblong 4to. $20.00 net.*

The revision recently made was extensive and thorough. Large portions were entirely re-written and the whole brought up to date by numerous additions, alterations, and amendments. Three new chapters were added on longitudinal framing, damage repairs, and lifeboats and davits. A large amount of new matter was also added in connection with oil vessels, oil fuel, fire extinguishing, freeboard regulations, and bulkhead subdivision.

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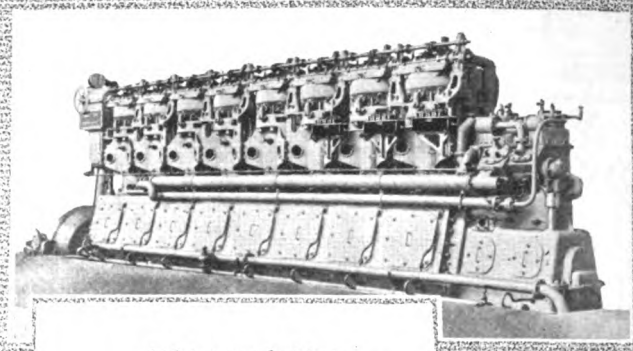

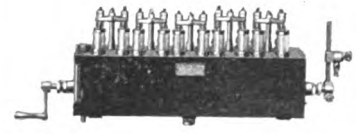

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THE exacting dependable lubrication requirements of the above 1300-1500 B. H. P. Four-Cycle Diesel Submarine Engine are supplied by

McCORD FORCE-FEED LUBRICATORS

Service tests on two engines of same power, the one equipped with McCord Lubricators, and the other not equipped, showed the following lubricating oil consumption—

McCord equipped engine
0.018 lb. per B. H. P. hour!

Other engine, 0.0334 lb. per B. H. P. hour!

Made of cast and extruded brass McCord Force-Feed Lubricators will not corrode in salt water service

McCORD MANUFACTURING CO.
INCORPORATED
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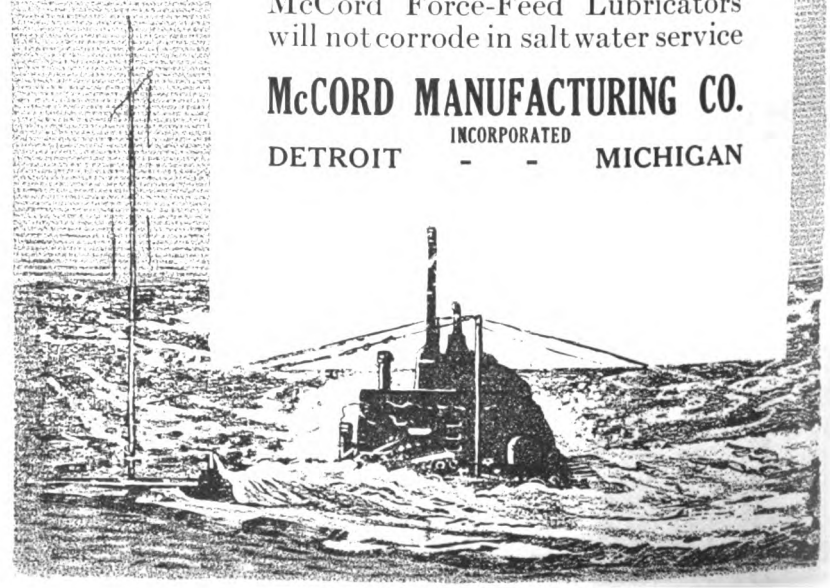

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—AND NOW IT'S THE "PIONEER"

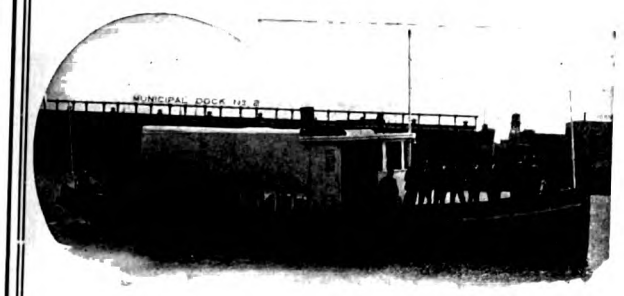
The "Frances E"—one of six boats owned by one company—all powered with "C-O" engines.

The first beam trawler equipped with oil engines — in service in the United States.

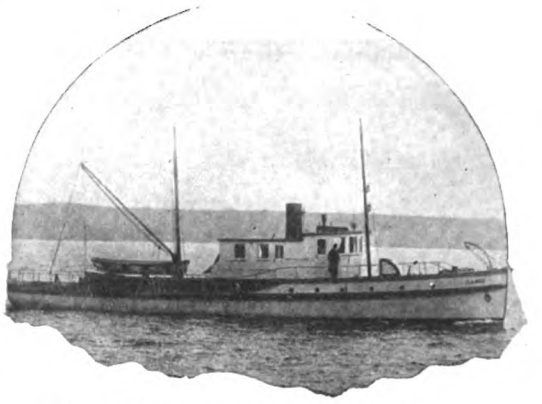
The engines are

The "Roamer"—with two 45 H.P. "C-O" engines.

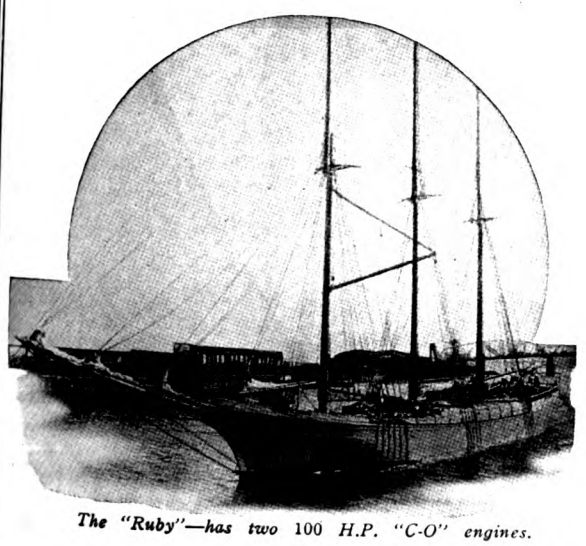
FAIRBANKS-MORSE "C-O" MARINE OIL ENGINES



The "Brookfield"—with a 100 H.P. "C-O" engine.



The "Causo"—has a 100 H.P. "C-O" engine.



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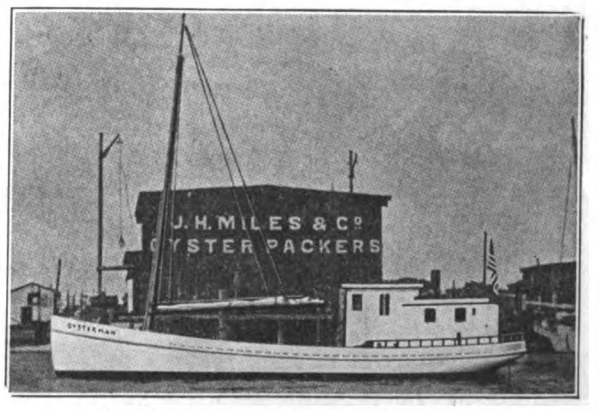
Selected because of proven economy, using low priced fuel oils—giving unfailing flexible power on many types of work boats



The "Oysterman"—with a 45 H.P. "C-O."

Guaranteed by Fairbanks-Morse Quality

FAIRBANKS, MORSE & CO.

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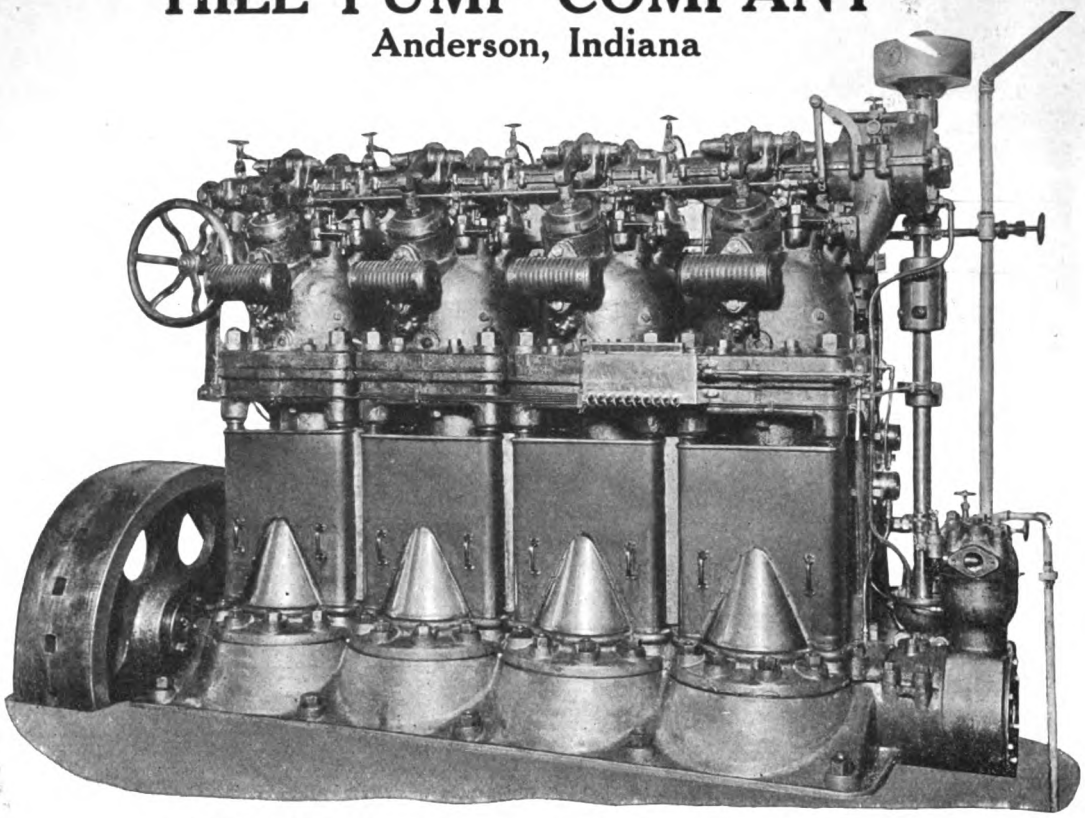
SUCCESSORS
TO
LYONS ATLAS COMPANY
Indianapolis, Indiana
AND
HILL PUMP COMPANY
Anderson, Indiana



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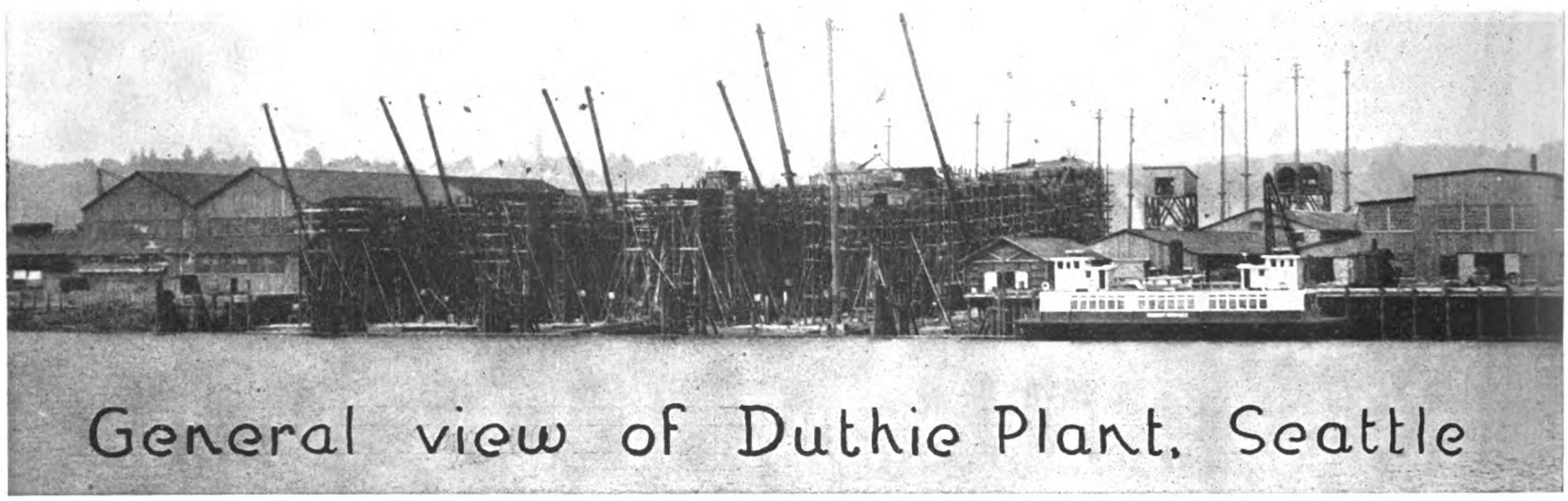

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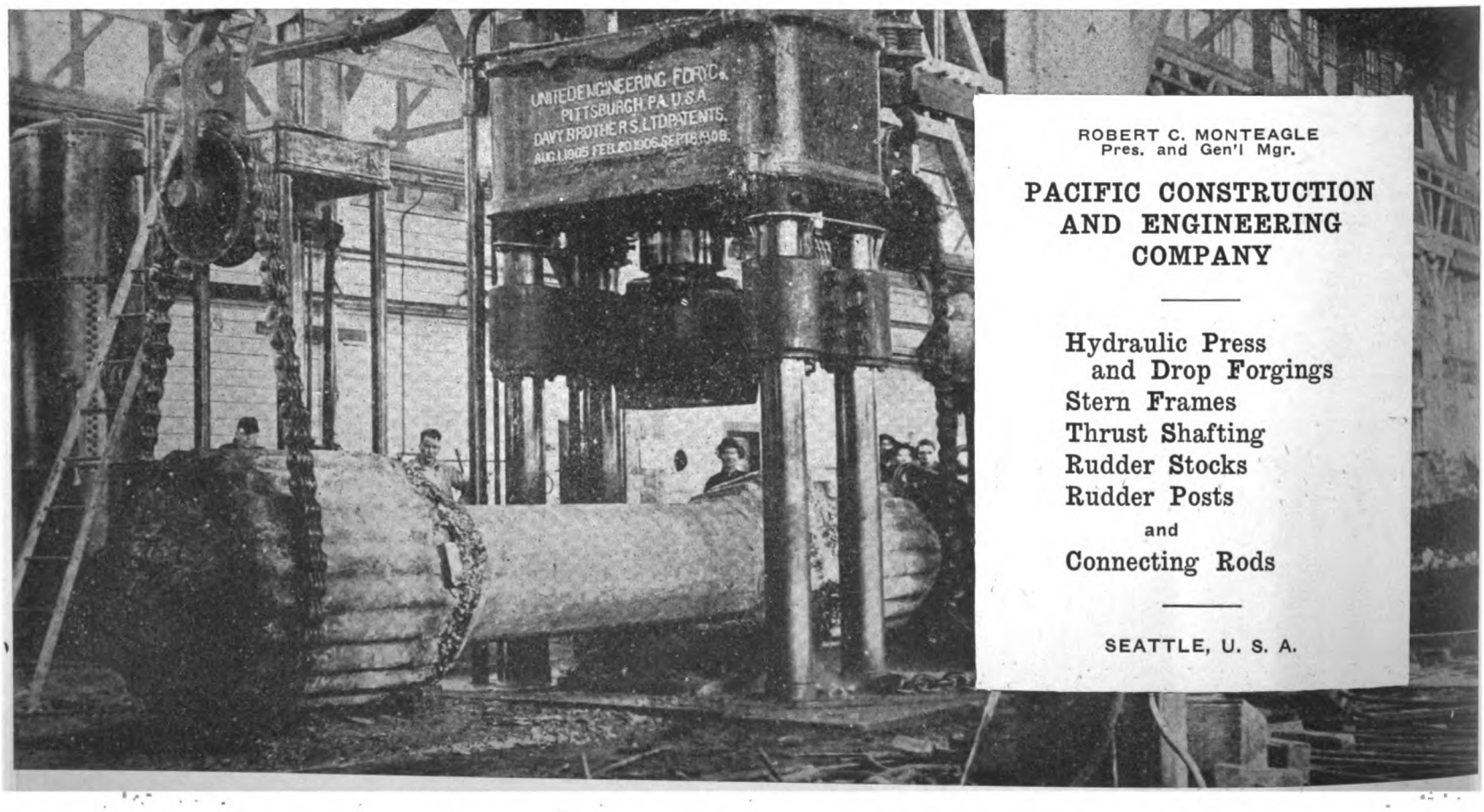

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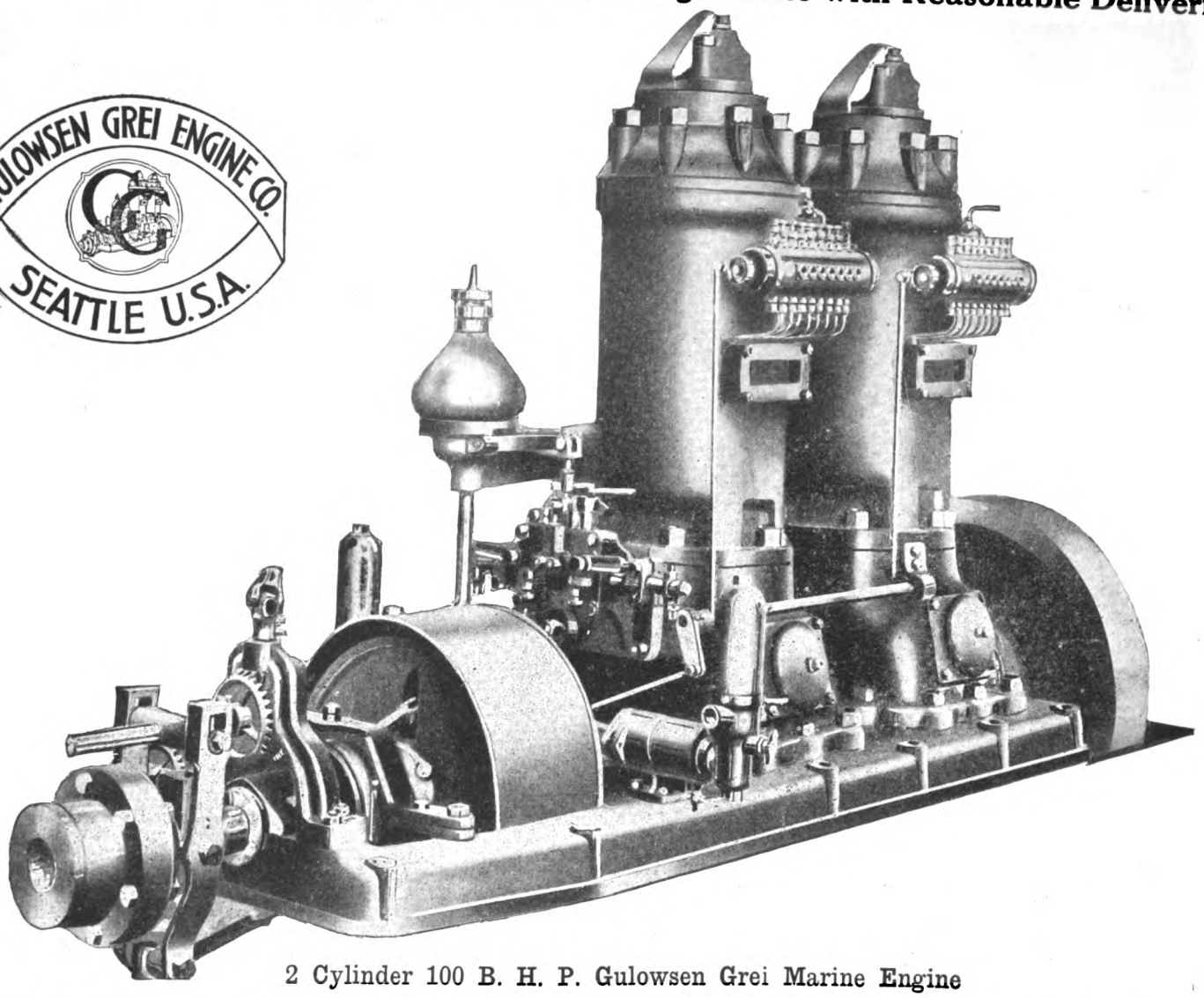

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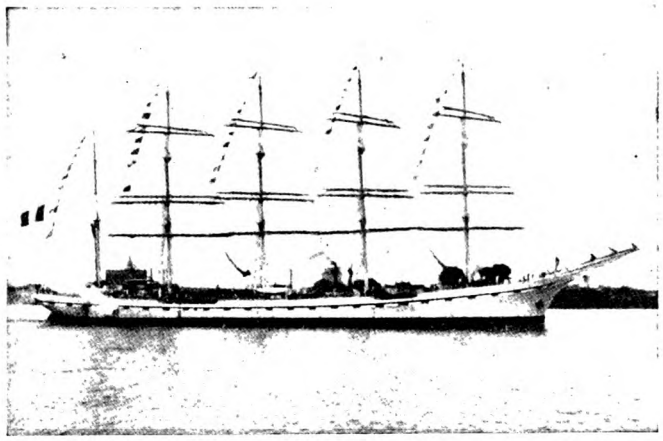

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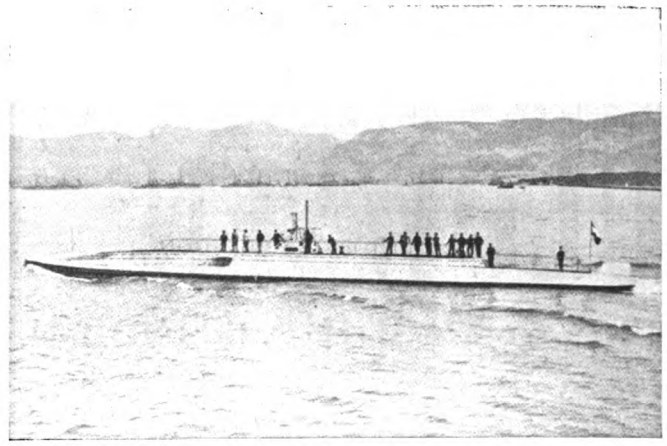

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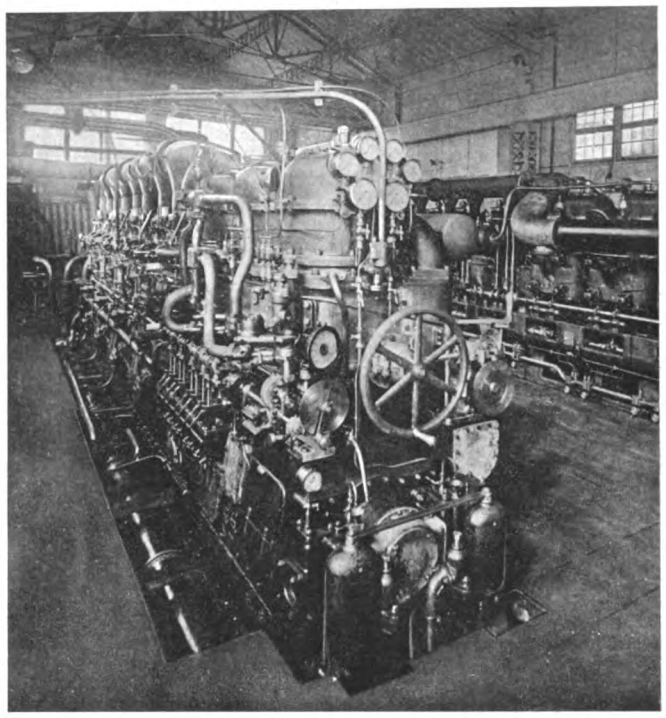

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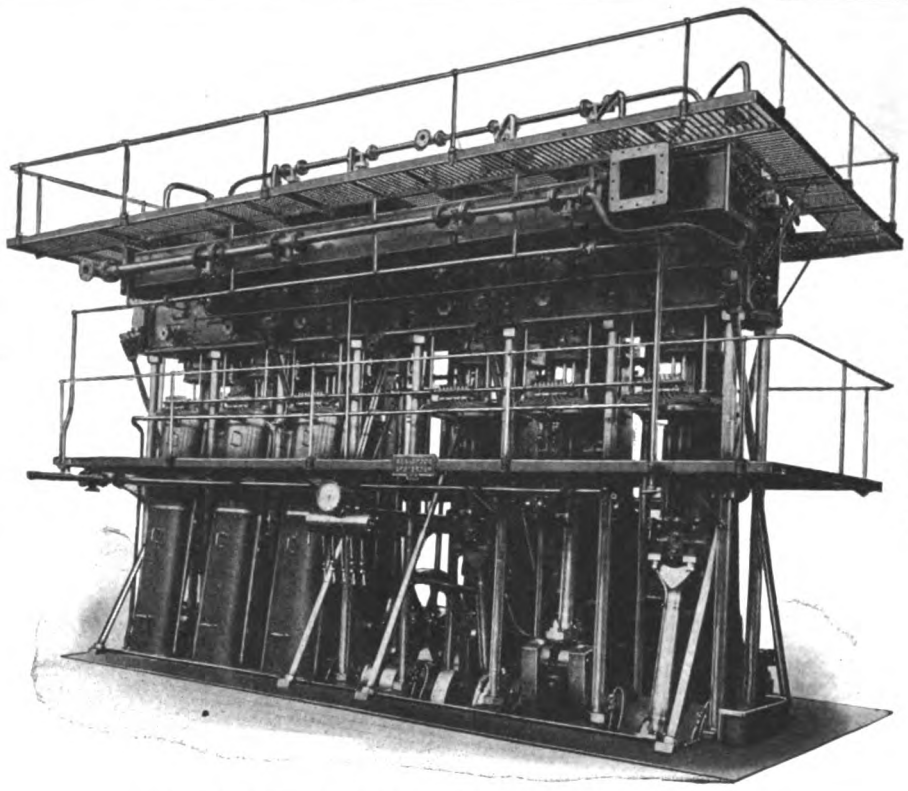

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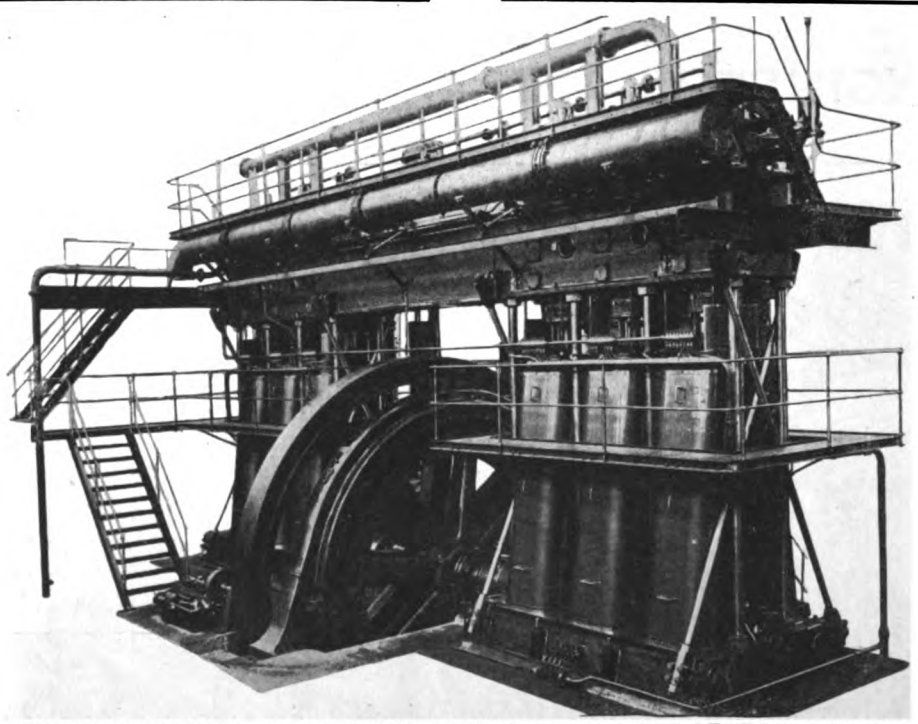

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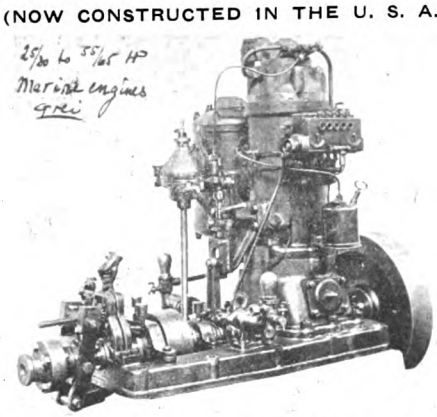

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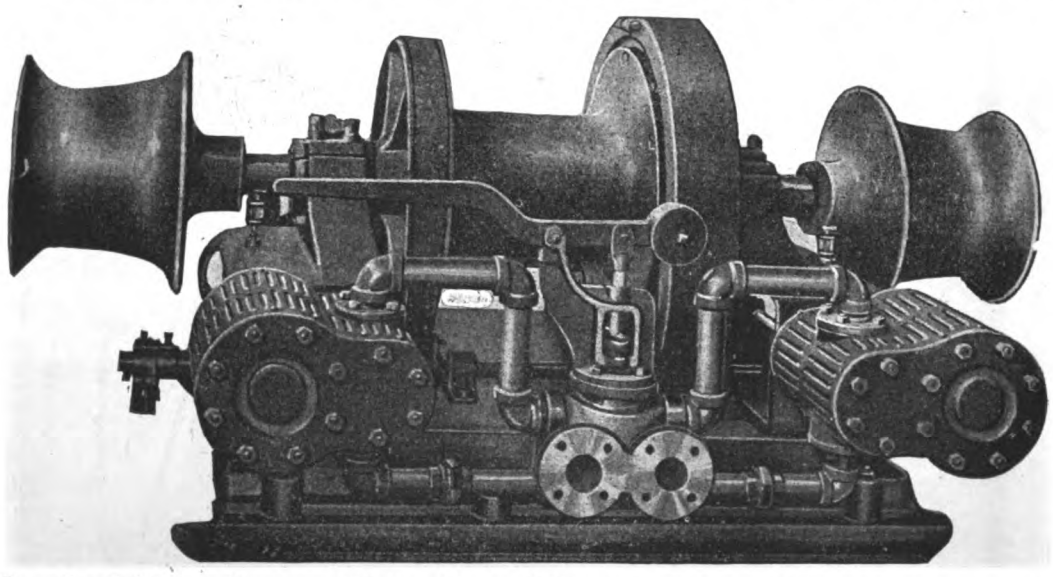

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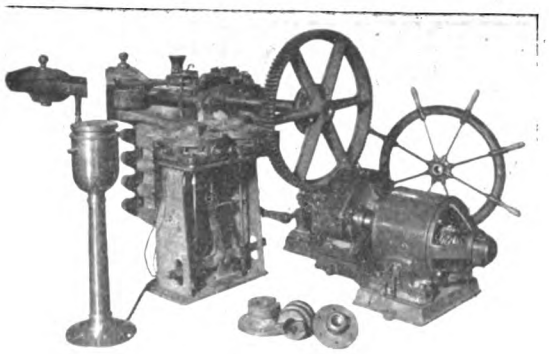

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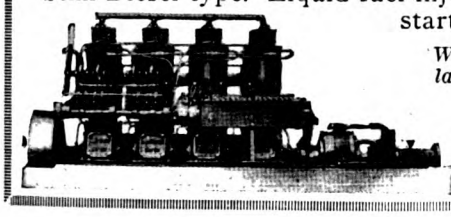

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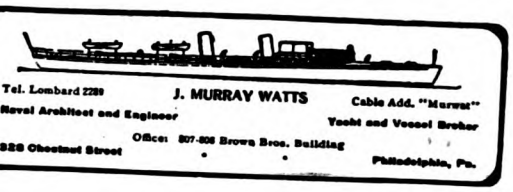

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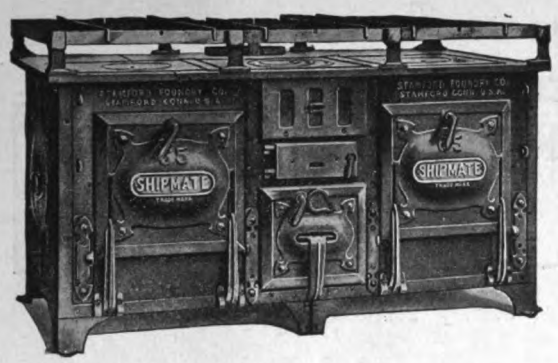

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SUNDE & d'EVERS CO.

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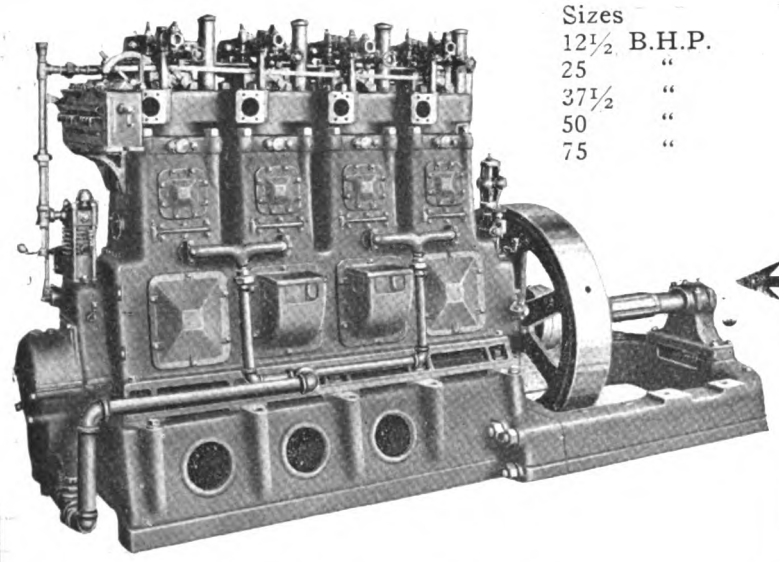

Sizes
12½ B.H.P.
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The Best Power on the Cheapest Fuel

NO HOT BALL OR HOT SURFACE

Reduce your fuel costs by installing Burnoils, the perfected heavy oil engines. Burnoils use no trouble-making hot surfaces, carburetors or electrical devices. Tested and proven by years of severe service. Burnoils start easily and quickly — run steadily and economically. Stationary or marine types.

BURNOIL ENGINE CO.

1102 High St., South Bend, Ind., U. S. A.

Electric Motors

Largest and Most Complete Stock on Pacific Coast

Ship Yard Equipment

HOISTS, COMPRESSORS AIR TOOLS

A. H. COX & COMPANY, Inc.

SEATTLE, WASHINGTON

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Two New 100 H. P.

Skandia Marine Oil Engines ready for immediate delivery from factory, Oakland, California, or will deliver Boston, Mass. Price and particulars.

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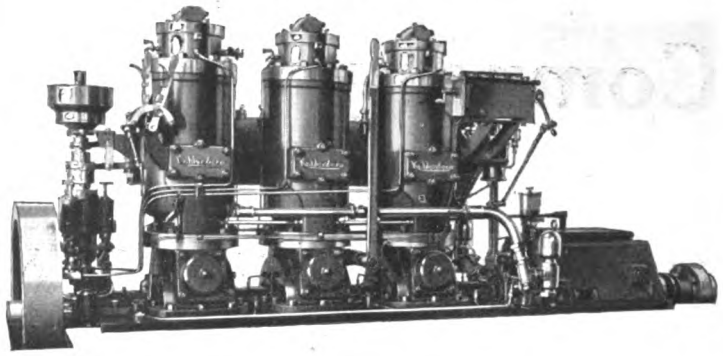
(HEAVY DUTY)



Positive Governor Control from No Load to Full Load.
Variable speed instantly obtainable from just "turning over" to wide open.
Operates on any of the crude fuel oils or kerosene.
Absolutely reliable. Fuel consumption .55 lbs. per H. P. hour.

Sizes 60 H. P. Upwards

KAHLENBERG standard engines in medium and heavy duty types are made in sizes from 2 to 54 H. P., and we would strongly recommend them for operating on KEROSENE, SOLAR OIL and GAS OIL. You ought to know more of the exclusive advantages the KAHLENBERG offers you.

Write for our literature stating your requirements fully.

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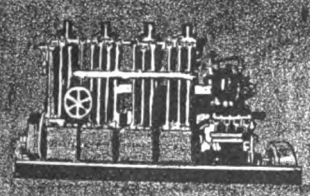

internal combustion engines

-run best when lubricated with

ARISTO

MARINE MOTOR OIL

They deliver most power and run most economically when using the clean fuel

DIESOL

Supplied at main Pacific Ports by the UNION OIL COMPANY OF CALIFORNIA

The East Asiatic Co., Ltd.

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TO THE EAST:

Sailings from COPENHAGEN, GOTHENBURG and CHRISTIANIA to HONGKONG, SHANGHAI and JAPAN PORTS.
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TO SOUTH AFRICA:

Sailings from DENMARK, NORWAY and SWEDEN to CAPE TOWN, MOSSEL BAY, ALGOA BAY (PORT ELIZABETH), EAST LONDON, DURBAN (PORT NATAL), DELAGOA BAY (LOURENCO MARQUES) and BEIRA.

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Sailings from COPHENHAGEN, GOTHENBURG and CHRISTIANIA to COLON and PANAMA (with transhipment to CENTRAL AMERICAN PORTS), LOS ANGELES HARBOUR, SAN FRANCISCO, PORTLAND (ORE.), TACOMA, SEATTLE and VANCOUVER.

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Sailings from COPENHAGEN, GOTHENBURG and CHRISTIANIA to COLON and PANAMA (with transhipment to CENTRAL AMERICAN PORTS), GUAYAQUIL, CALLAO, MOLLENDO, IQUIQUE, ANTOFAGASTA, and VALPARAISO.

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Otto Jelstrup, 310 Sansome Street, San Francisco, California

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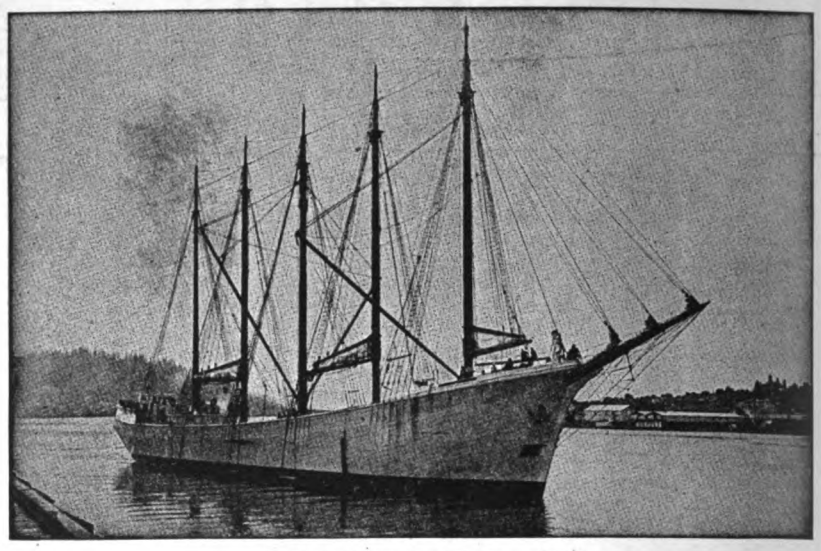

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HIGHEST CLASS WOODEN VESSELS
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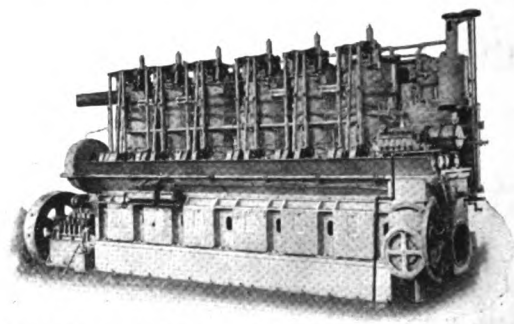
DIESEL ENGINES

Heavy Duty Diesel Type Marine Engines



One of the 500 B.H.P. Diesel Type Reversible Marine Engines of the Motorship "Cethana" of the Australian Commonwealth Government Line

These MARINE ENGINES are the result of EIGHTEEN YEARS' stationary and marine DIESEL ENGINE EXPERIENCE and THIRTY YEARS' EXPERIENCE in building the LARGEST and HIGHEST CLASS OF STEAM ENGINES.

These engines are built in the LARGEST and most COMPLETELY EQUIPPED PLANT in this country which is devoted EXCLUSIVELY to the building of Diesel Type Oil Engines.

SHIP OWNERS AND SHIPBUILDERS should avail themselves of these facilities.

SIZES AVAILABLE: 300, 500, 750, 1000 and 1350 B. H. P.

ALL SIX CYLINDER, ALL FOUR CYCLE, and all directly REVERSIBLE.

McIntosh & Seymour Corporation

AUBURN, NEW YORK

149 Broadway, New York City 815 Sheldon Building, San Francisco, Calif.

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ELECTRIC CARGO WINCHES

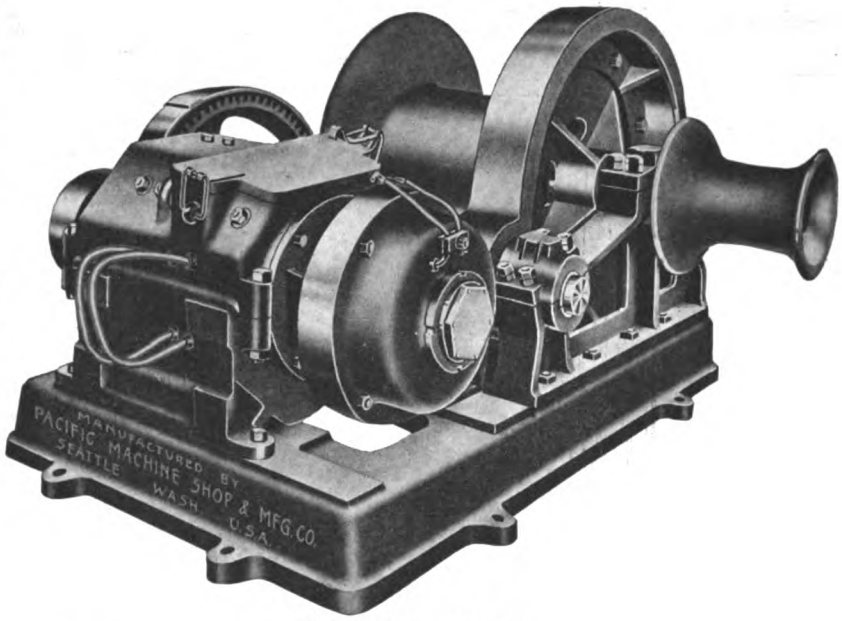
Direct Geared
Absolutely Waterproof

Perfect Control Hoisting, Lowering and Holding

Automatically protected against damage from overloading.

A single drum winch, controlled by one lever.

The fastest, simplest and most economical cargo handling equipment for Motorships, full powered and auxiliary, steamships and sailing vessels, loading lumber, coal or general cargo.



Hoisting speed varies with load.

Heavy loads can be handled slowly, light loads can be handled fast.

Any load can be lowered as fast or as slow as desired.

Any load can be held suspended for any length of time without danger of dropping.

If the current is cut off the load will NOT drop.

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QUICK DELIVERIES AND LOW PRICES

ARE A RARE COMBINATION THESE DAYS BUT OUR EXTENDED FACILITIES NOW ENABLE US TO OFFER THE SAME

DESPITE HIGH COSTS OF LABOR AND MATERIALS

OUR PRICES ON MARINE HEAVY-OIL ENGINES ARE FROM

$90.00 to $120.00 per B.H.P.

ACCORDING TO SIZE

JACOBSON

MARINE AND STATIONARY

OIL ENGINES

AND

HEAVY-OIL DRIVEN WINCHES

FOR MERCHANT SHIPS AND FISHING VESSELS, ETC.

AGENCIES. THERE ARE SEVERAL TERRITORIES IN THE U. S. A. AND ABROAD FOR WHICH WE HAVE NOT YET APPOINTED AGENTS.

THE JACOBSON ENGINEERING CO.

SARATOGA SPRINGS, NEW YORK, U. S. A.

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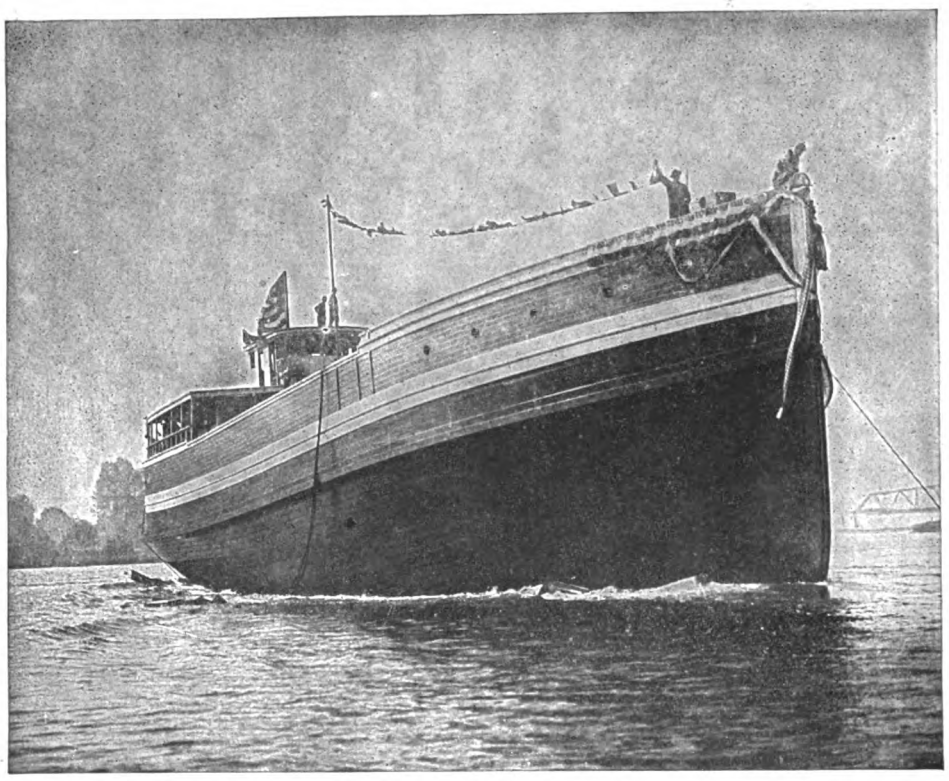
ATLAS FULL DIESEL TYPE ENGINE

SERVICE RELIABILITY POWER

ATLAS-IMPERIAL

DIESEL ENGINES BUILT

IN SIZES From 110 to 1200 B. H. P.



DISTILLATE ENGINES BUILT

IN SIZES From 4 to 250 B. H. P.

FREIGHTER "APEX" EQUIPPED WITH 350 H. P. ATLAS DIESEL

Mr. Lee H. Wakefield, the owner of the "Apex" is also the owner of seventeen boats installed with Atlas engines, two of these being Atlas Diesels. Mr. Wakefield selects the Atlas knowing that it is the best engine obtainable and that their service is unequaled.

AN ENGINE NOT AN *EXPERIMENT*

ATLAS-IMPERIAL GAS ENGINE CO.

MAIN OFFICE — OAKLAND, CALIFORNIA — FACTORY

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Mexico City—Wm. Young & Co., La Calle de Gante No. 11.
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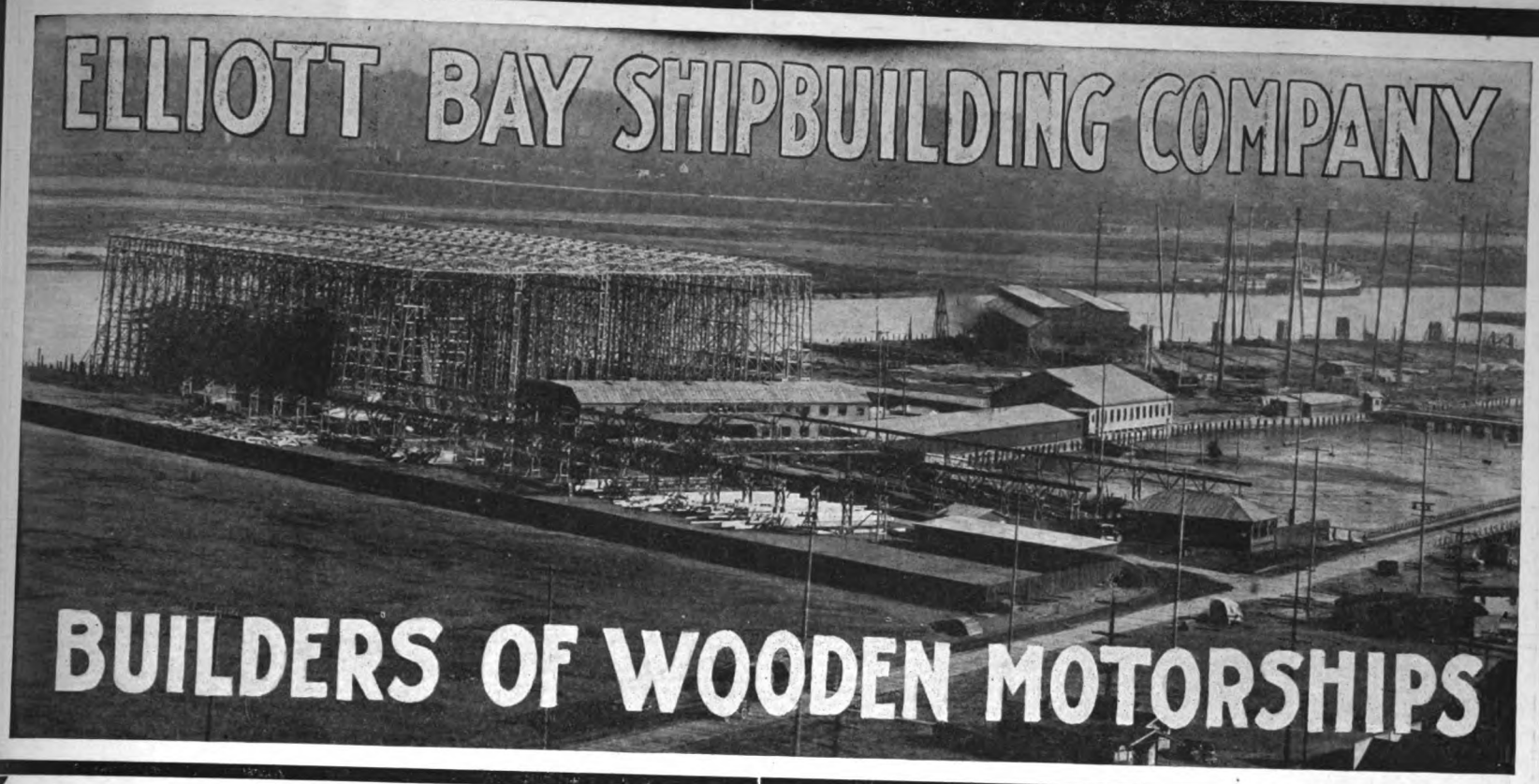

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With Every Appliance to Assist in

Speed and Good Workmanship

Five Full-Powered 3,500 Tons Wooden Motorships Now in Course of Construction

Plant at Seattle, Wash.

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For Builders and Operators

We Are Supplying Those
Extra High-Grade Brass

SHIPS LIGHTS

That the Shipping Board Specify

RUNNING LIGHTS
ANCHOR LIGHTS
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And No Ship Is "Class A" Without a

SHIPMATE RANGE

All Sizes For Every Purpose

PLYMOUTH CORDAGE **ANCHOR CHAIN**
BALDT AND PROVIDENCE ANCHORS
SANDS MARINE PLUMBING

In Fact Old Established Lines of Ship Chandlery That You Can Depend Upon

MARINE ENGINES

FRISCO STANDARD—Heavy Duty
FRISBIE—Medium Duty
FERRO—Light Work

We Have an Engine for Every Service

Write for Catalog

Pacific Net & Twine Company

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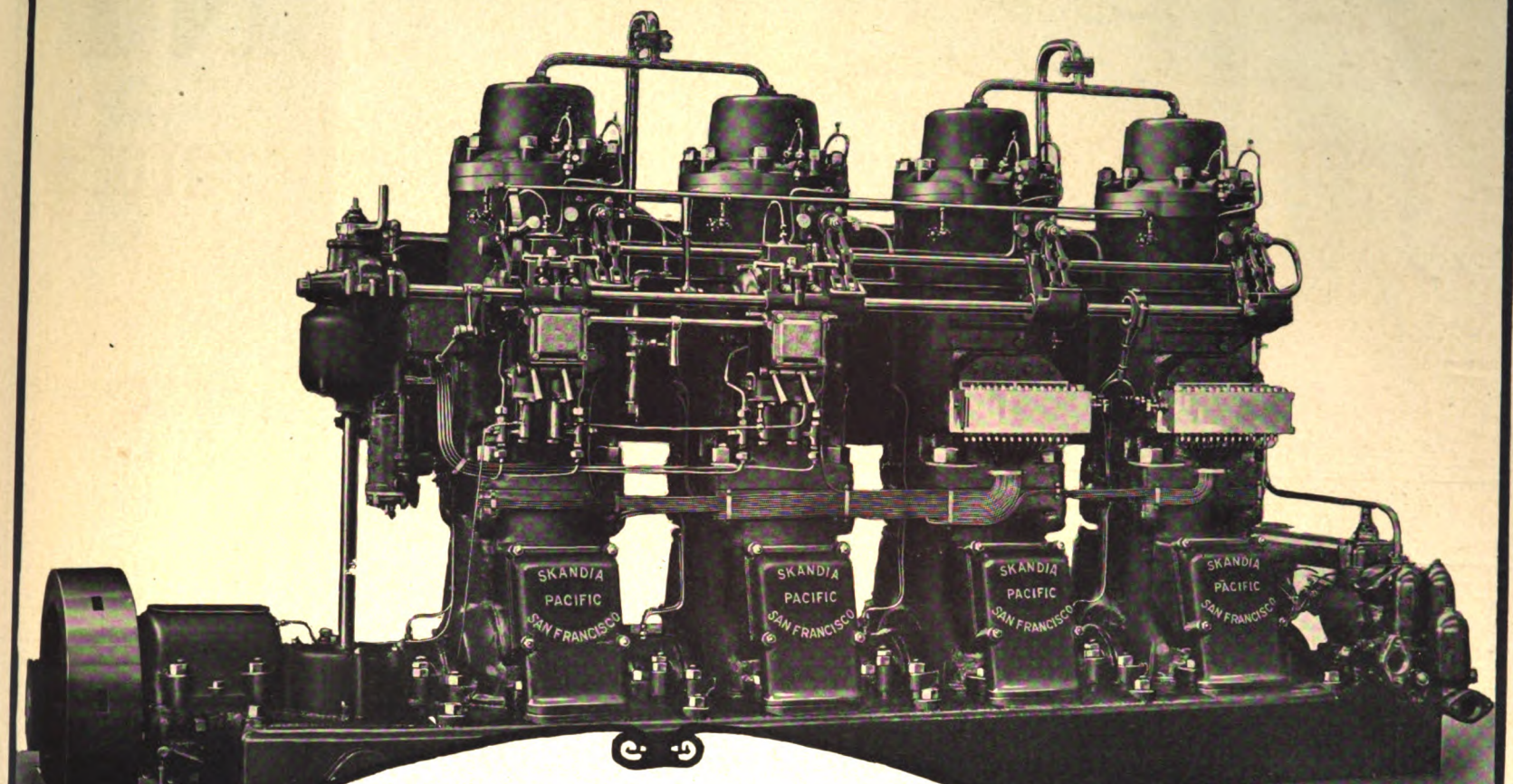

Correct Lubrication
FOR DIESEL and SEMI-DIESEL ENGINES

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surface Ignition, Semi-Diesel, or Diesel type—use

CALOL DIESEL ENGINE OIL OR CALOL DIESEL ENGINE OIL HEAVY

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service. At points named below and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

CORRECT FUEL FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil. Fuel Oil for Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
FOR DIESEL and SEMI-DIESEL ENGINES

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

RICHMOND, CALIF.
SEATTLE, WASH.
PORTLAND (WILLBRIDGE), ORE.
HONOLULU, T. H.

By barge at:

SEATTLE, WASH.
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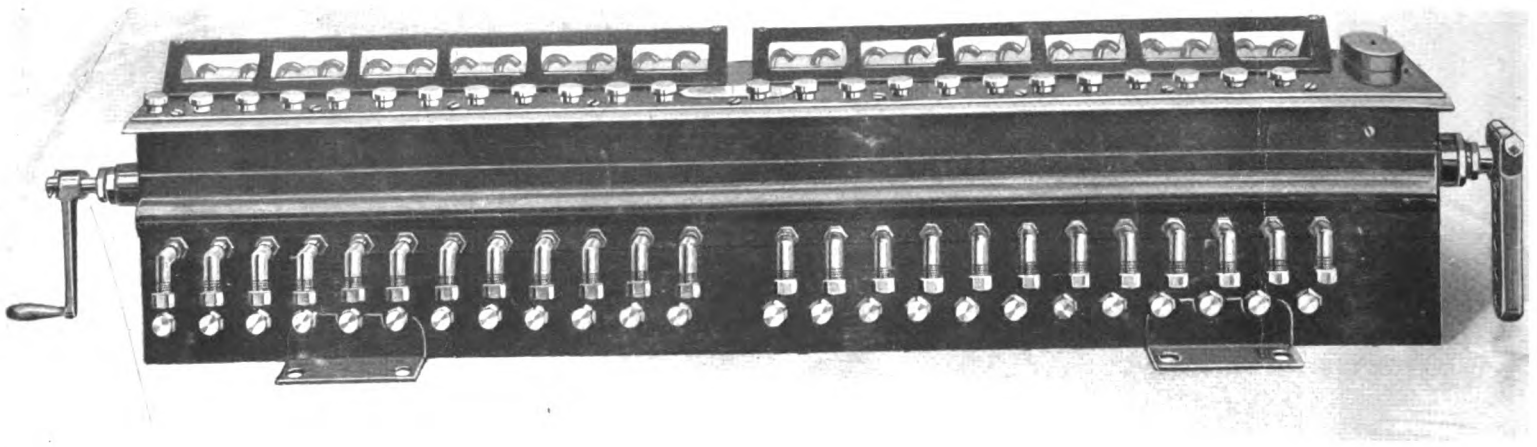

A 24-feed Madison-Kipp Lubricator, used on marine motors

They Do Not Need Valves

MADISON-KIPP Lubricators free heavy-powered marine combustion engines from the two common difficulties of operation encountered when oil-pumps with valves are employed.

Such valves sooner or later clog or stick, causing a temporary failure of oil-supply, often sufficient to menace the life of wearing parts.

Such valves also make accurate feed control difficult, for they entail adjustment through limiting the intake stroke—and limiting such short strokes closely makes accuracy and faithfulness impossible.

Madison-Kipp Lubricators have no valves.

Intake is timed and delivery regulated by means of registered ports in the hollow-plunger sleeve and barrel.

In consequence their action is unfailingly free from sticking and clogging.

Their feed adjustments are made solely by controlling the amount of oil measured out, so that the plungers always make the complete stroke necessary to accuracy and faithfulness.

Their entire design is so straight and clean that no parts protrude from the cover.

The entire operating mechanism is immersed in oil and cannot be hampered or impeded by dirt.

More and more marine motor builders are using them in preference to other kinds.

They are also in general use on steam hammers, dredges, compressors and on two-thirds of all farm tractors in use.

We can make prompt deliveries, for our factory is the largest of any devoted to lubricator manufacture.

Write for our catalogs.

The Madison-Kipp Lubricator Co.
MADISON, WISCONSIN

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BOLINDER'S

550,000 B. H. P. of Bolinder's Engines Now in Use in All Parts of the World

Present Sales and Yearly Output 100,000 B.H.P.

M.S.SANTA ISABEL.

Voyage No. 1 — Drawn by C.B.DeBernardi - Chief Engr.

- MARCH 1918 -

Description of voyage of "Santa Isabel":

1 Sailed San Francisco Jan 25 - Arrived Seattle Jan 31 -
2 Sailed Seattle Feb 6 Arrived San Francisco Feb 10 -
3 Sailed San Fran. Feb 14 Arrived San Pedro Feb 16 -
4 Sailed San Pedro Feb 27 - Arrived Amapala Mar 12 -
5 Sailed Amapala Mar 14 - Arrived Acajutla Mar 15 -
6 Sailed Acajutla Mar 15 - Arrived Payta March 23 -
7 Sailed Payta Mar 23 - Arrived Talara Bay Mar 24 -
8 Sailed Talara Bay Mar 27 - Arrived Eten March 28 -
9 Sailed Eten March 30 Arrived Salaverry Mar 31
10 Sailed Salaverry Mar 31 - Arrived Samanco April 1 -
11 Sailed Samanco April 1 - Arrived Callao April 2
12 Sailed Callao April 4 - Arrived Mollendo April 7 -
13 Sailed Mollendo April 9 - Arrived Arica April 9 -
14 Sailed Arica April 9 - Arrived Iquique April 10 -
15 Sailed Iquique April 11 - Arrived Antofagasta April 12
16 Sailed Antofagasta April 13 - Arrived Coquimbo April 16 -
17 Sailed Coquimbo April 16 - Arrived Valparaiso April 18

- Return Voyage via New York -

18 Sailed Valparaiso April 19 - Arrived Antofagasta April 23
19 Sailed Antofagasta April 25 Arrived Arica April 27
20 Sailed Arica April 27 Arrived Balboa C.Z. May 4 -
Entered canal May 10 - Left canal May 10 - 3.30 P.M.
21 Sailed Cristobal May 10 Arrived New York May 23d

Detentions at sea - none Detentions in port, At San Pedro Cal. discharged cargo and dry-docked to repair outboard shaft coupling Time lost 113 days
Detentions at any port account of repairs to Engines or Cargo hoisting machinery None
Distance covered 13 850 Miles
Time consumed Four months (or 120 days)

C B DeBernardi
Chief Engr.

The log pictured herewith is from an average voyage of one of 4 sister motorships all equipped with twin sets, 320 B. H. P. Bolinder Fuel Oil Engines and emphasizes the well-established reputation of the Bolinder Engine.

ENGINED WITH TWIN SET OF 320 B. H. P. "BOLINDER" MARINE FUEL-OIL ENGINES.

Present U. S. A. Bolinder Installations 55,000 B.H.P.

Craft under construction and to be fitted with "BOLINDER" Engines in the United States alone aggregate over 145,000 tons; "BOLINDER" Engines now in service, over 12,500

The BOLINDER

THE ENGINE THAT IS NOT A DIESEL
THE ENGINE THAT IS NOT A SEMI-DIESEL
THE ENGINE THAT IS THE BOLINDER
THE STANDARD FOR SURFACE-IGNITION FUEL OIL ENGINES

An example of the ruggedness of the "BOLINDER" Engine was displayed in the case of the M. S. "ASTRI" recently. This vessel encountered a hurricane off Mazatlan and became severely strained, resulting in the flooding of the engine room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

HENRY LUND & CO., Marine Building San Francisco CALIFORNIA

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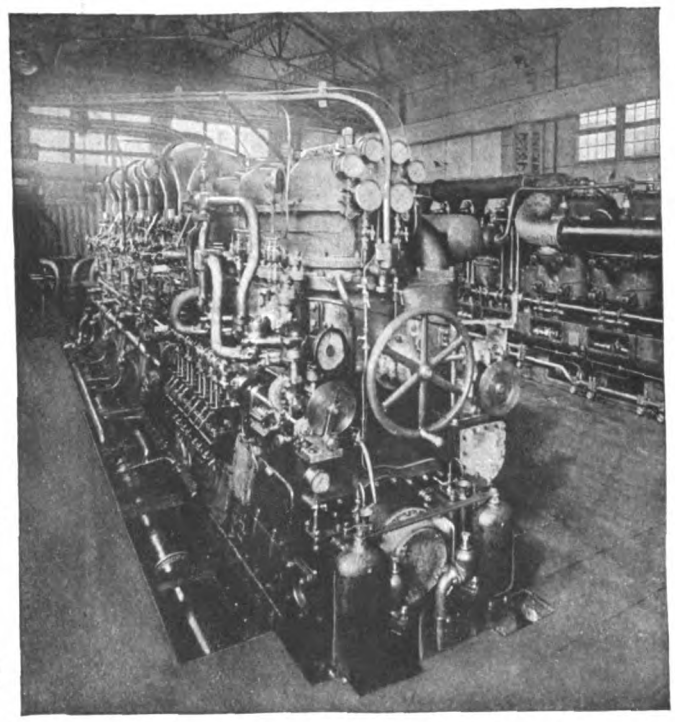
POWERS PER ENGINE

700
1500
and
2400
H. P.

For ONE Motor
(Submarine Type)



A SCHNEIDER 1500 H. P. DIESEL MARINE ENGINE FOR SUBMARINES

LIGHT WEIGHT
(Only 46 lbs. per B. H. P.)

STRONGLY BUILT

EFFICIENCY
(0.400 lb. of Fuel Oil per B. H. P.)

Two and Four Cycle DIESEL ENGINES

For War and Merchant Ships

SCHNEIDER & CIE

HEAD OFFICE AND GENERAL MANAGEMENT
42 RUE D'ANJOU, PARIS (8^E)
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OIL FUEL

THE FUEL OF THE 20th CENTURY

The Asiatic Petroleum Co., Ltd
are prepared to Supply OIL FUEL at

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Alexandria
Balik Pappan
Bangkok
Batavia
Bombay
Calcutta
Cape Town
Colombo
Curacoa
Hong Kong
Karachi
Lisbon (completed)
Madras
Melbourne
Montreal
Nagasaki
Palembang
Panama Canal (both ends) (completed)
Pangkalan Berandan
Penang
Portland Oregon, S. S. A. (building)
Port Said
Puloe Samboe
Rotterdam
Sabang
Saitozaki
San Francisco
San Pedro
Seattle, Washington, U. S. A. (building)
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Singapore
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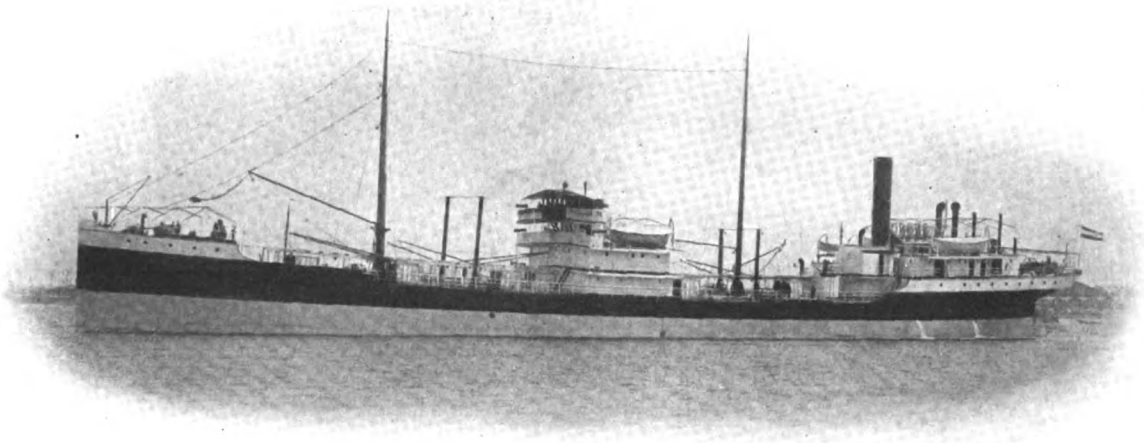
Vancouver (building)



ONE OF OUR FLEET OF OIL-CARRYING DIESEL-ENGINED MOTORSHIPS

Note.—During the war it is not possible to keep stocks at some of the above-named ports. It is therefore advisable for intending buyers to enquire whether stocks are available.

Buyers desiring information regarding supplies of and prices for **OIL FUEL** for use in Internal-combustion Engines or for other purposes should apply to **THE ASIATIC PETROLEUM COMPANY, LIMITED**, at the above address.

The Asiatic Petroleum Company also supply **KEROSENE OIL** for use in the smaller Internal-combustion Engines and are prepared to supply **PETROLEUM SPIRITS, LUBRICATING OILS, WAX** and **GREASES** in all far Eastern Markets.

THE ASIATIC PETROLEUM CO., LTD.

ST. HELEN'S COURT, GREAT ST. HELENS
LONDON, E. C., ENGLAND

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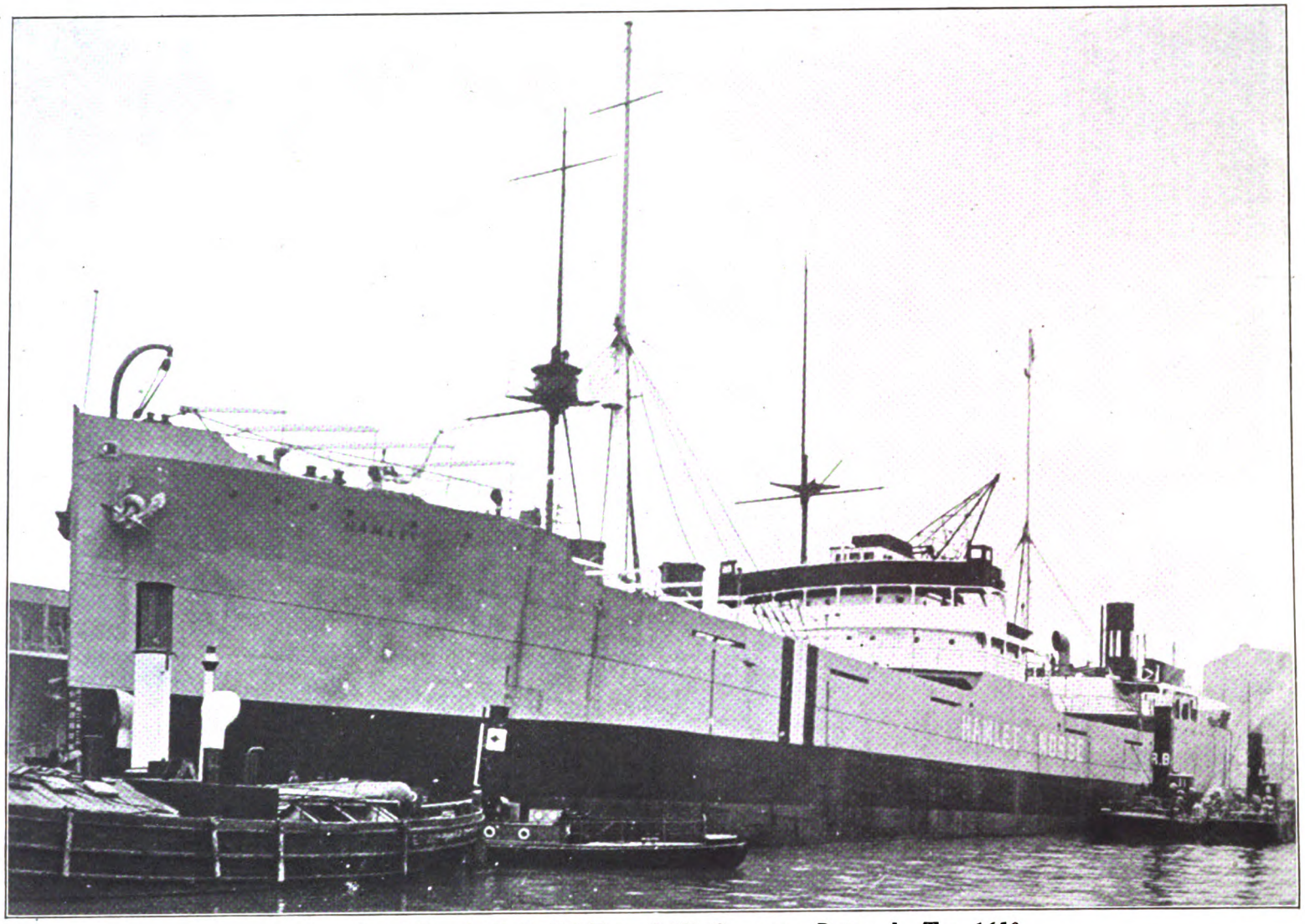
McINTOSH & SEYMOUR Heavy Duty Diesel Type Marine Engines

All Four-Cycle Six Cylinder and Directly Reversible

Sizes Available
300 B. H. P.
500 B H. P.
750 B H. P.
1000 B. H. P.
1350 B. H. P.



Motorship "Hamlet," 11,000 Tons D.W. Capacity, Driven by Two 1650 B. H. P. Diesel Type Marine Engines Built in Our Swedish Factory

149 BROADWAY
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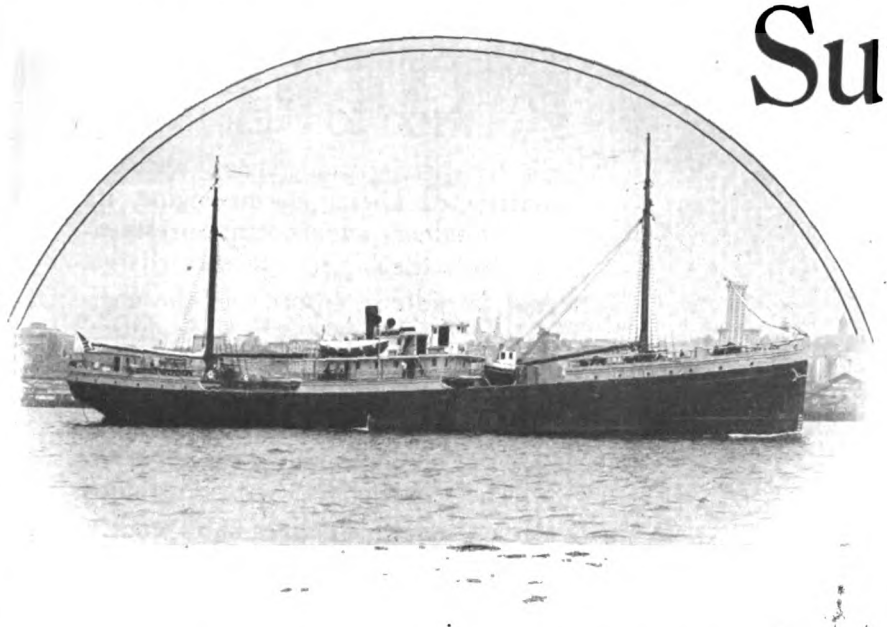
"The Dow-Diesel Engines Surprised Me"



FULL POWERED MOTORSHIP "LIBBY MAINE"

—said Captain Herre, master of the motorship "Libby Maine," on returning from his first voyage to Bristol Bay, Alaska. "I was always a little prejudiced against Diesel engines, but the Dow-Diesel made good in every way."

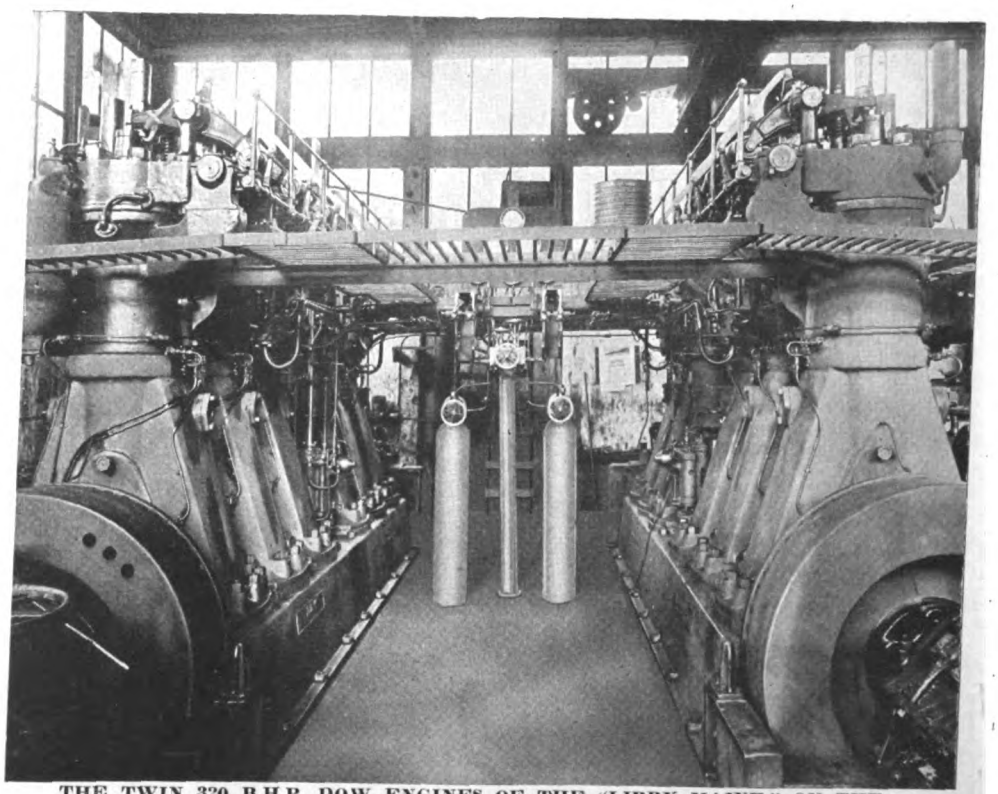
The Maiden Voyage of the Full-Powered Motorship "LIBBY MAINE" equipped with two 320 b.h.p.

Dow Full-Diesel Type Engines

demonstrated that the

DOW-DIESEL

engines are economical, thoroughly reliable and efficient and that they ARE a success.



THE TWIN 320 B.H.P. DOW ENGINES OF THE "LIBBY MAINE," ON THE TEST BLOCKS, ALAMEDA

Dow Pump & Diesel Engine Co.

Alameda, California

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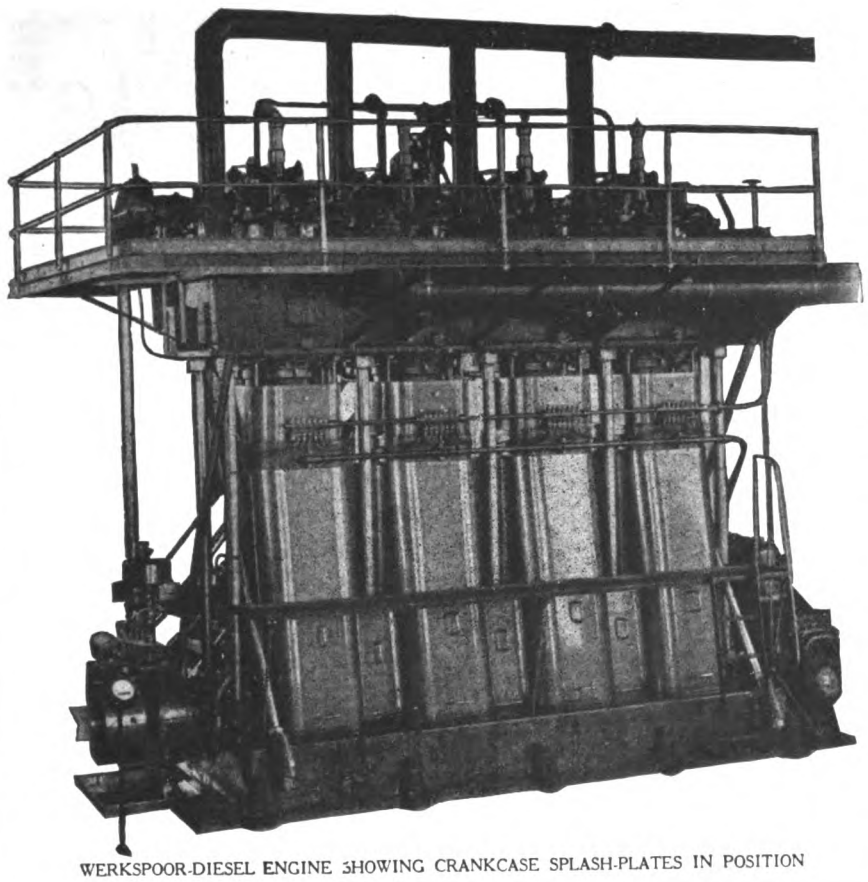
AMSTERDAM WERKSPOOR HOLLAND



WERKSPOOR-DIESEL ENGINE SHOWING CRANKCASE SPLASH-PLATES IN POSITION

True Value of Accessibility and Its Relation to Reliability

Given a well-designed and properly constructed Diesel marine-engine, its steady and continuous operation rests entirely with the ship's-engineers in charge.

And, in order to ensure that the engineers will take interest in their duties, the engine-builder must produce a design that reduces the work of the operators to a minimum: also a design which conforms to machinery to which steam-engineers are accustomed.

An engine which gives hard work to attend and overhaul will be indifferently handled by the average ship's-engineers, and their reports to the owner will be unfavorable.

These two illustrations demonstrate the remarkable accessibility of the Werkspoor-Diesel engine. For rapid adjustment and overhaul no other Diesel engine can compare with it.

Builders of the FIRST full-powered ocean-going DIESEL Motorship

Merchant-Marine, Submarine, and Stationary Types

475 I. H. P. to 2,000 I. H. P.

U. S. A. MARINE LICENSEES

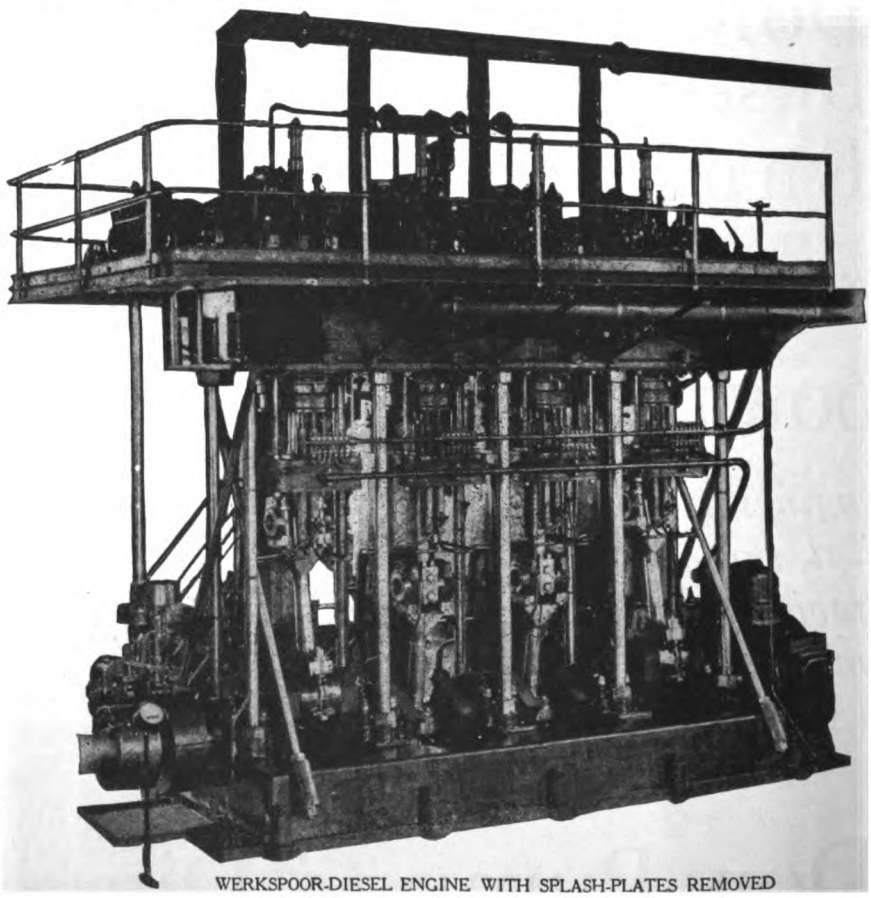
New York Shipbuilding Corporation, Camden, N. J.

Skandia-Pacific Oil Engine Co. San Francisco, California

Midwest Engine Co.
Successors to
Lyons-Atlas Company
Indianapolis, Ind.

Newport News Shipbuilding & Dry Dock Co., Newport News, Va.

The Supereminent Attainment of Marine Oil-Engine Design



WERKSPOOR-DIESEL ENGINE WITH SPLASH-PLATES REMOVED

DIESEL MARINE TYPE ENGINES

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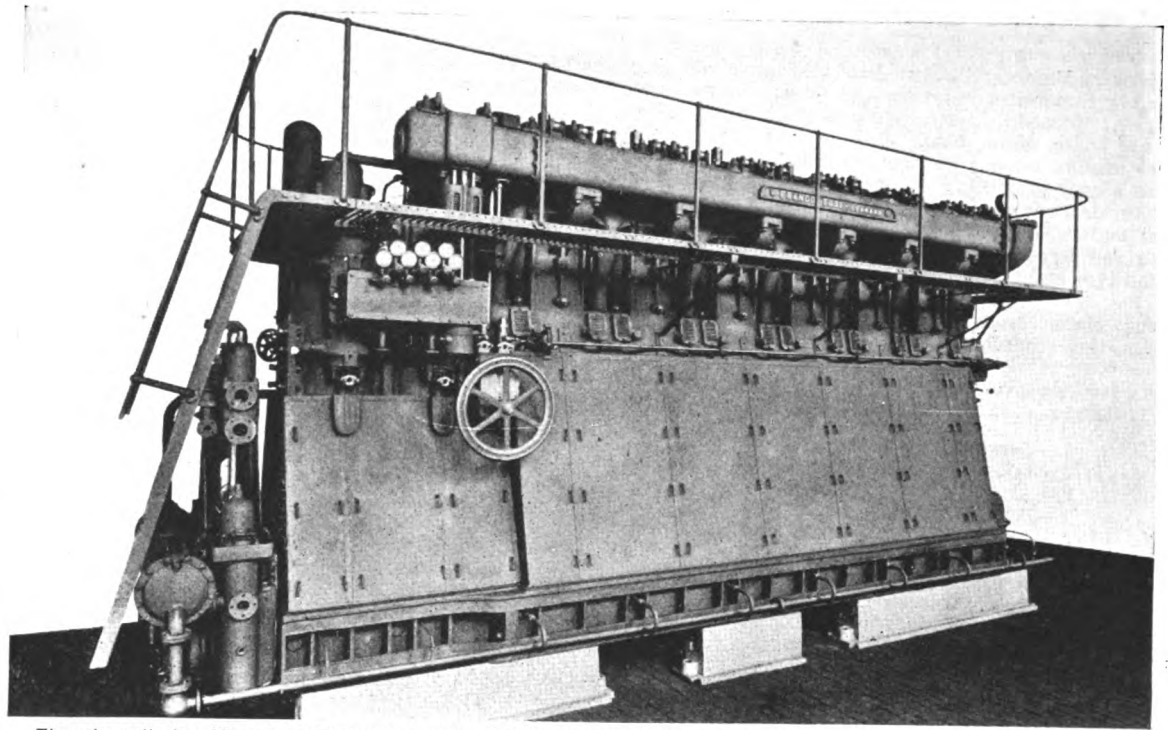
FRANCO TOSI
HEAVY
· OIL ENGINES ·

DIESEL ENGINES FOR DECK AND ENGINE-ROOM AUXILIARY PLANTS ON MERCANTILE AND NAVAL SHIPS.

AUXILIARY PROPELLING MACHINERY FOR SAILING-VESSELS.



The six-cylinder 600 b.h.p. Tosi four-cycle, direct-reversible Diesel-type merchant marine heavy-oil engine

FOUR AND TWO CYCLE CROSS-HEAD MARINE DIESEL ENGINES OF THE HEAVY-DUTY MERCHANT MARINE TYPE.

HIGH-SPEED DIESEL ENGINES FOR FAST NAVAL SURFACE-CRAFTS, AND SUBMARINES.

MORE THAN 100,000 B. H. P. IN USE ON 1200 CYLINDERS UP TO 400 B. H. P. PER CYLINDER.

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SHARE CAPITAL

500 MILLIONS OF LIRE (Fully Paid)

Societa Anonima Italiana

GIO. ANSALDO & CO.

Registered Office, Rome

Administrative and Industrial Office, Genoa, Italy

THE GIO. ANSALDO & C. WORKS, founded by the PRIME MINISTER CAVOUR in 1853 under the Direction of the distinguished engineer, GIOVANNI ANSALDO, had, especially under the subsequent Management and Direction of the Bombrini Brothers, a prosperous career, during which the manufacture was extended from early Locomotives to Marine Engines and to Shipbuilding and other Naval Work. The greatest impulse, however, was given by the late Comm. Ferdinando Maria Perrone in 1904, when the Firm was transformed into the present LIMITED SOCIETY to attain wider scope, which has now been fully realized by his Sons. The original WORKS OF SAMPIERDARENA and the SHIPYARD OF SESTRI PONENTE have recently been greatly enlarged and augmented by other ESTABLISHMENTS and associated CONCERNS, devoted not only to mercantile and Naval Shipbuilding in all its branches, but also to armour plate, guns, and war material of all kinds.

The SOCIETY has at present at work, in its own 28 ESTABLISHMENTS and other associated CONCERNS as hereunder enumerated, about 50,000 hands, men and women, and is capable of building and is building:—

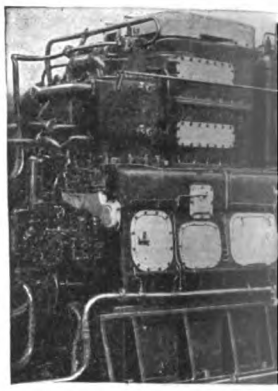
1st—Warships and mercantile vessels of all kinds and sizes from big Super-dreadnoughts and ocean liners to destroyers, torpedo boats, submarines, cargo steamers, tug boats, motor boats, etc.
2nd—Diesel marine oil engines up to 2,000 b. h. p., also marine steam propelling engines, both reciprocating and turbine engines with and without gearing.
3rd—Steam boilers, both water-tube and cylindrical, of all types and sizes.
4th—Locomotives and tenders complete, and Machine Tools.
5th—Armour plates, guns, armoured turrets complete, ammunition complete, metallic cartridges and casings.
6th—Auxiliaries for propelling machinery, and all kinds of auxiliary machinery for ships, such as steering gears, capstans, winches, distilling condensers, and screw propellers.
7th—Dynamos and all electric appliances, auxiliary electric machinery both for ship and land service, electric gear for turrets and guns, elevators, steering gears, electric capstans and winches, cranes and electric propelling machinery.
8th—Aeroplanes and their motors.
9th—Steel, cast iron and bronze castings of all varieties and sizes.
10th—Steel forgings of all kinds and sizes, special steels, and Files.
11th—Boiler steel tubes, steel, iron, copper and brass pipes.
12th—Furniture of all descriptions, both wood and metallic, for warships, liners and mercantile vessels.

List of Establishments

1.—General Engineering Works.....SAMPIERDARENA
2.—Locomotive Construction Works.....SAMPIERDARENA
3.—Artillery and Big Gun Works.....SAMPIERDARENA
4.—War Munition Works.....SAMPIERDARENA
5.—Aeroplane Motor Works, San Martino.....SAMPIERDARENA
6.—Cast Steel Foundry.....CORNIGLIANO LIGURE
7.—Armour Plates and Forging Plant.....CORNIGLIANO LIGURE
8.—Oxygen and Hydrogen Production Plant.....CORNIGLIANO LIGURE
9.—New Artillery and Big Gun Works.....CORNIGLIANO LIGURE
10.—Electric Products Plant.....CORNIGLIANO LIGURE
11.—Bronze Foundry.....CORNIGLIANO LIGURE
12.—Delta Metal and Alloys Foundry.....CORNIGLIANO LIGURE
13.—Brass Cartridge Works.....CORNIGLIANO LIGURE
14.—Internal-Combustion Engine Works.....CORNIGLIANO LIGURE
15.—Aeroplane Works No. 1 (Marine Hangars).....BORZOLI (Mare)
16.—Aeroplane Works No. 2.....BOLZANETO
17.—Aeroplane Works No. 3.....TORINO (Corso Peschiera 251)
18.—Tube Mills.....FEGINO (Val Polcevera)
19.—Projectile-Case Works.....FEGINO
20.—Naval Shipyard.....SESTRI PONENTE
21.—Saw Mill and Boat Yards.....VOLTRI
22.—Ammunition Works.....SESTRI PONENTE
23.—Cast Iron Foundry.....PEGLI
24.—Fire Brick Plant.....STAZZANO (Serravalle Scrivia)
25.—Genoa Shipyards.....MOLOGIANO (Porto di Genova)
26.—Iron Mines.....COGNE (Valle d'Aosta)
27.—Electric Furnaces for Steel and Pig Iron and Rolling Mill..AOSTA
28.—Special Alloys Plant.....AOSTA

Associated Concerns

1.—Shipyard and Works, Savoia.....CORNIGLIANO LIGURE
2.—Shipyard and Works, Fiat San Giorgio.....SPEZIA
3.—Internal-combustion Engine Works, Fiat San GiogioTORINO
4.—Ore Mines.....COGNE (Val d'Aosta).
5.—Italian National S.S. Company.....GENOVA
6.—Lignite Mines.....GROSSETO (Tuscany).
7.—Cerpelli's Centrifugal and Turbine Pump Works..LA SPEZIA
8.—Westinghouse Company.....VADO LIGURY
9.—Magnesite Mines.....QUAREIDUELLO (Tuscany)
10.—Insulators Company.....LEGHOURN



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THE ANSALDO-BUILT BA
THE ROY

SUBMARINE

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each

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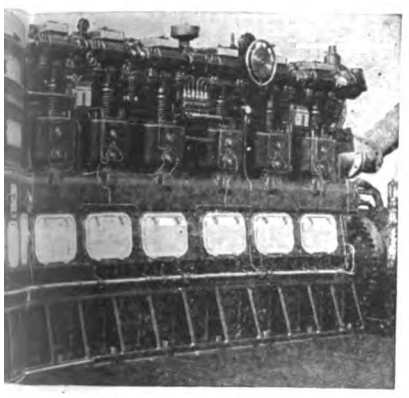
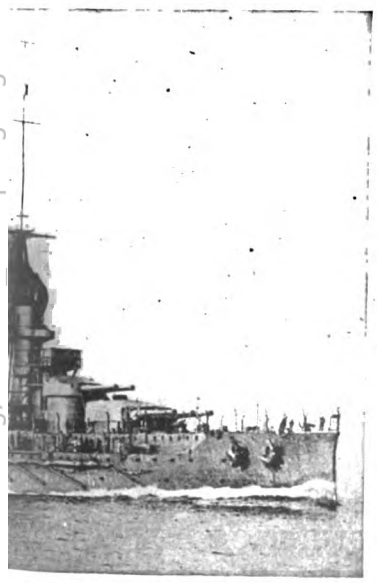
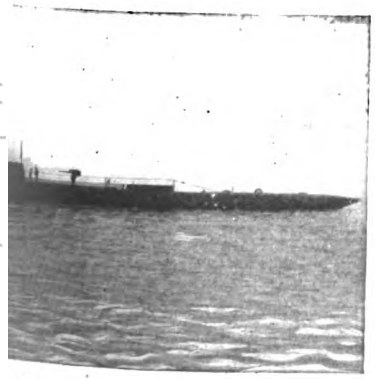


HIGH SPEED MOTOR, 1350 B. H. P.



TTLESHIP "GULIO CESARE" OF
L ITALIAN NAVY



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22 MILLIONS OF LIRE (Fully Paid)

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Specialists in the construction of

Diesel and Steam Cargo Vessels, Torpedo Boats, Submarines Diesel-Engined Submarine Chasers and Heavy-Oil Marine Motors

(Type Fiat-San Giorgio)

such as were supplied to the Navics of

Brazil, Denmark, Great Britian, Italy, Portugal, Spain, Russia, Japan, United States and Sweden, and Germany (before the war)

Complete Construction of War and Merchant Ships. Cargo and Passenger Vessels of any Capacity. Ships equipped and repaired.

Heavy-Oil Marine Motors, type Fiat-San Giorgio, for War and Merchant Ships of any capacity.

The Fiat-San Giorgio plants, which now show a continuous industrial development, will employ from 18,000 to 20,000 workingmen during the current year.

The Italian Emergency Fleet

The Spezia Shipyard every year will launch not less than 18 standardized Diesel Motorships of 8,100 to 10,000 tons D. W. capacity each, with complete equipment and machinery built by the FIAT-SAN GIORGIO exclusively, while the output of submarines and torpedo-boats will remain undiminished.

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—Reversing Motors from full ahead to full astern done in ten seconds.

—Fuel Consumption two-cycle engines, 0.45 lbs. heavy oil, high density containing up to 20% Pitchy and Tarry Matters.

—Lubricating Oil Consumption, 0.017 lbs.

STANDARDIZED DIESEL-ENGINED MOTORSHIPS of 8100 Tons d.w.c. Each

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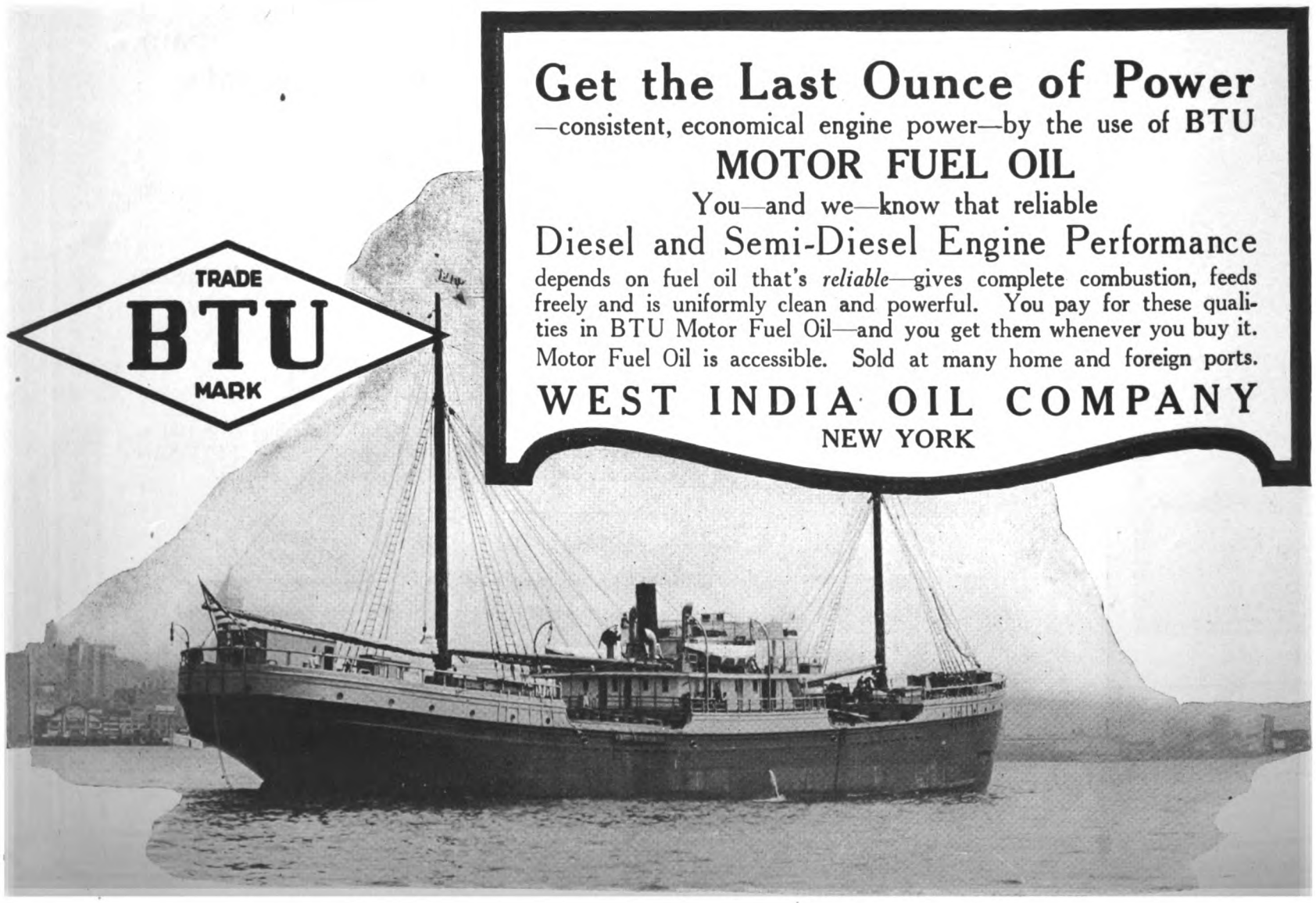

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SKANDIA OIL ENGINES

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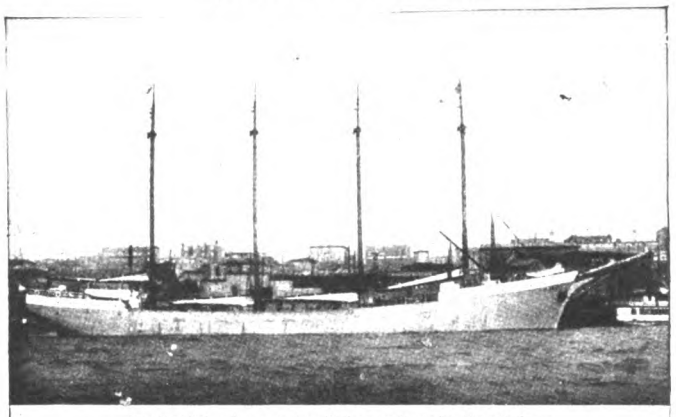

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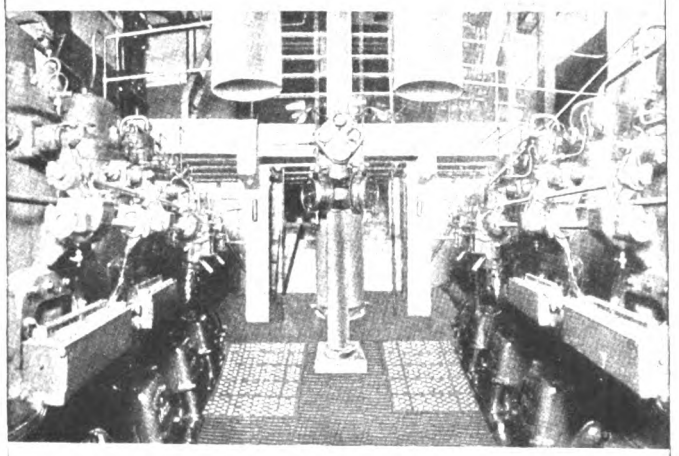
Operate on Low Gravity, Crude or Fuel Oils

550,000 B.H.P. Now in Use and on Order



Interior Engine Room, Motor Ship "Barbour"

5 B.H.P. to 500 B.H.P.

5 B.H.P. to 500 B.H.P.

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BUILDERS UNDER LICENSE OF THE

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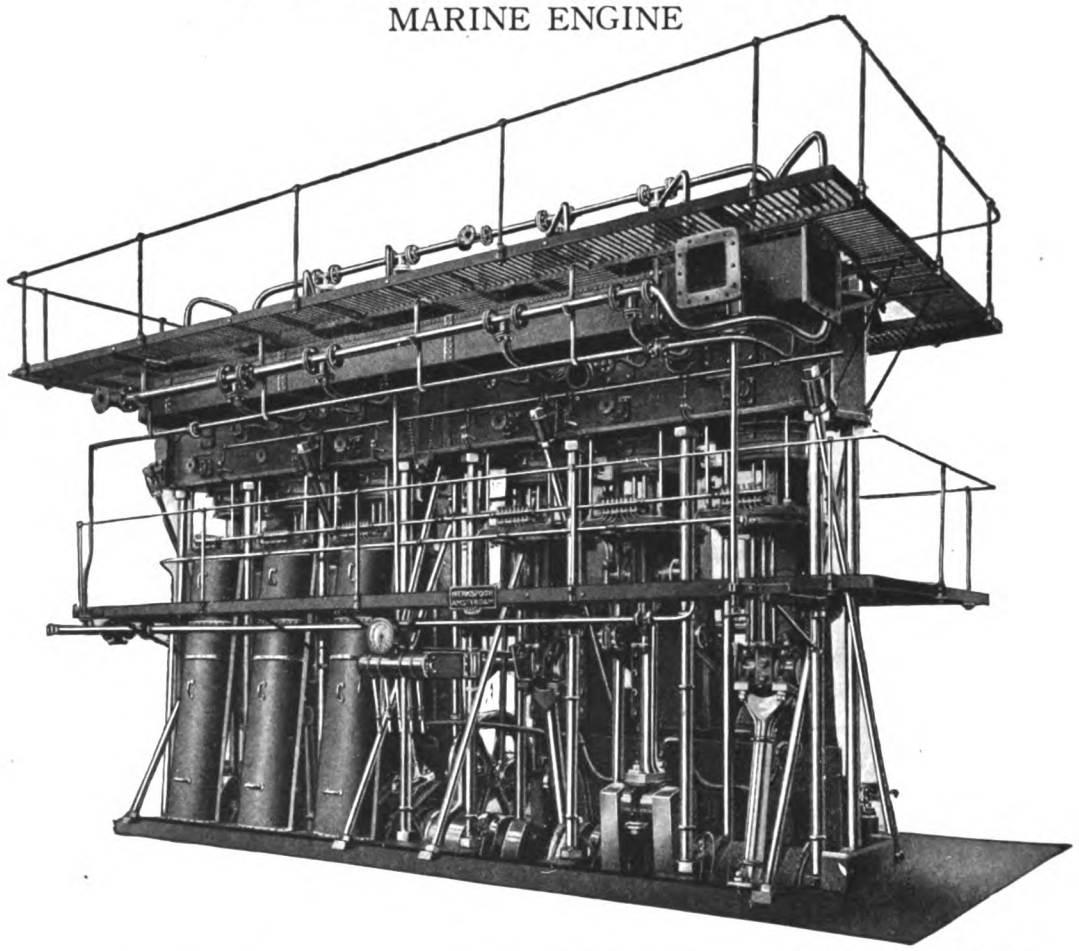

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Additional Superior Features:

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2.—Requires one-half the usual number of chains, cables, pulleys and brackets.

3.—Automatic and positive centering of operating levers in each signal position.

4.—Free from heavy strains and the consequent breakdowns of signal gear, which always endangers the ship.

You have only to specify "I-C. S." safety engine telegraph to obtain the most modern and efficient equipment.

Ask for Specifications

INTERNAL-COMBUSTION STEAM ENGINE CO.

Patentees and Manufacturers of Improved Marine Power Equipment 21 COLMAN DOCK, SEATTLE, U. S. A.

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Ireland	**Italy**	**Persia**	**Japan**	**Fiji Islands**
Canada	**Switzerland**	**India**	**Tahiti**	**Hawaii**
Alaska	**Mexico**	**S. Africa**	**Siberia**	**Philippine Islands**
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These Subscribers are Composed of Government Officials; Ship-owning Officials; Workboat Owners; great Shipbuilding Yards; big Engineering Works; Shipowners; and Other Important Men, who Decide and make Large Purchases.

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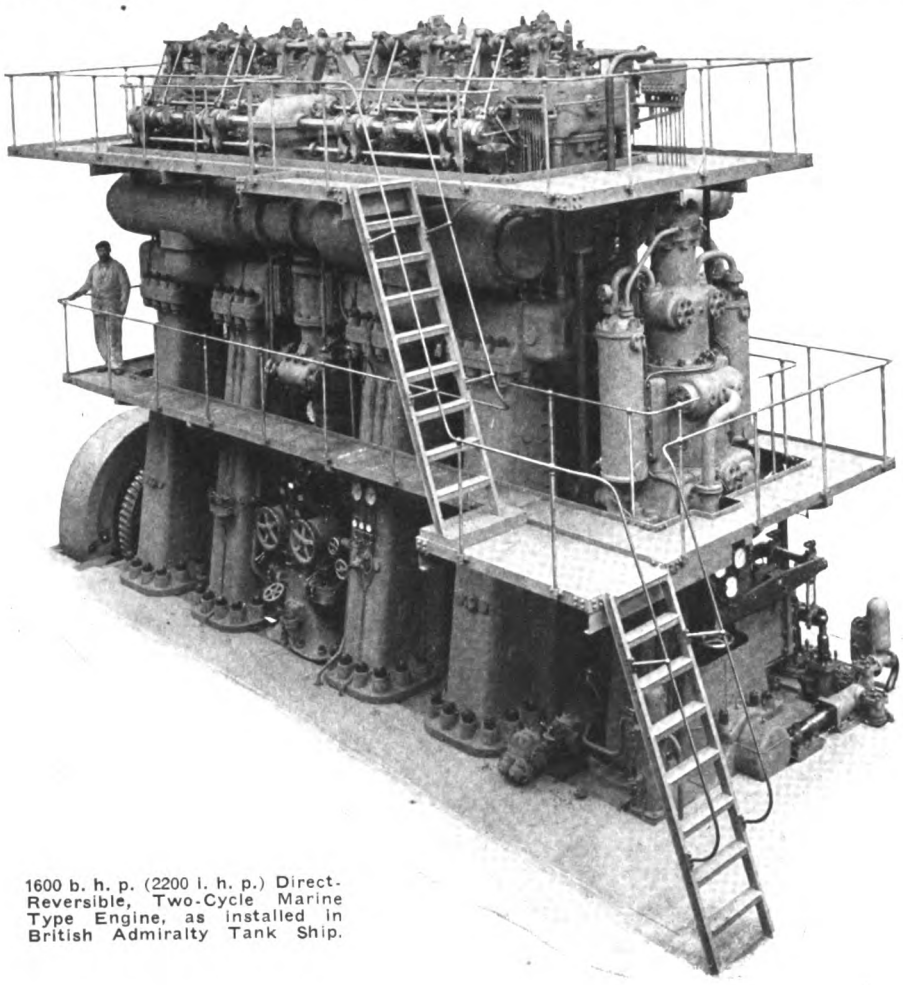

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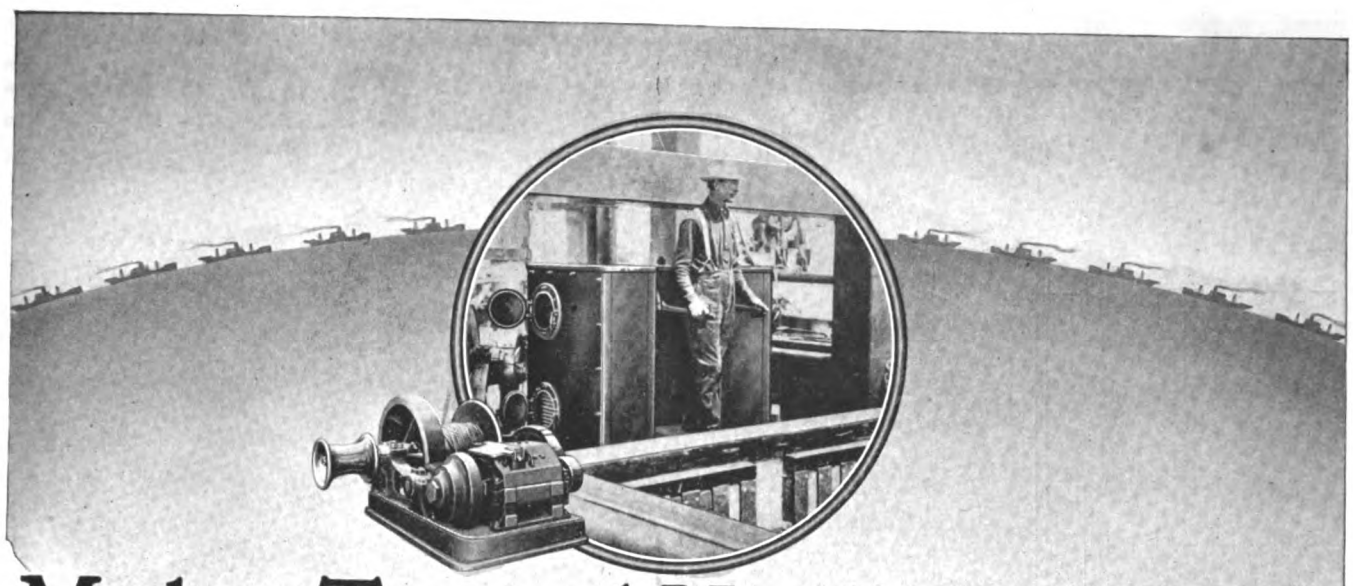

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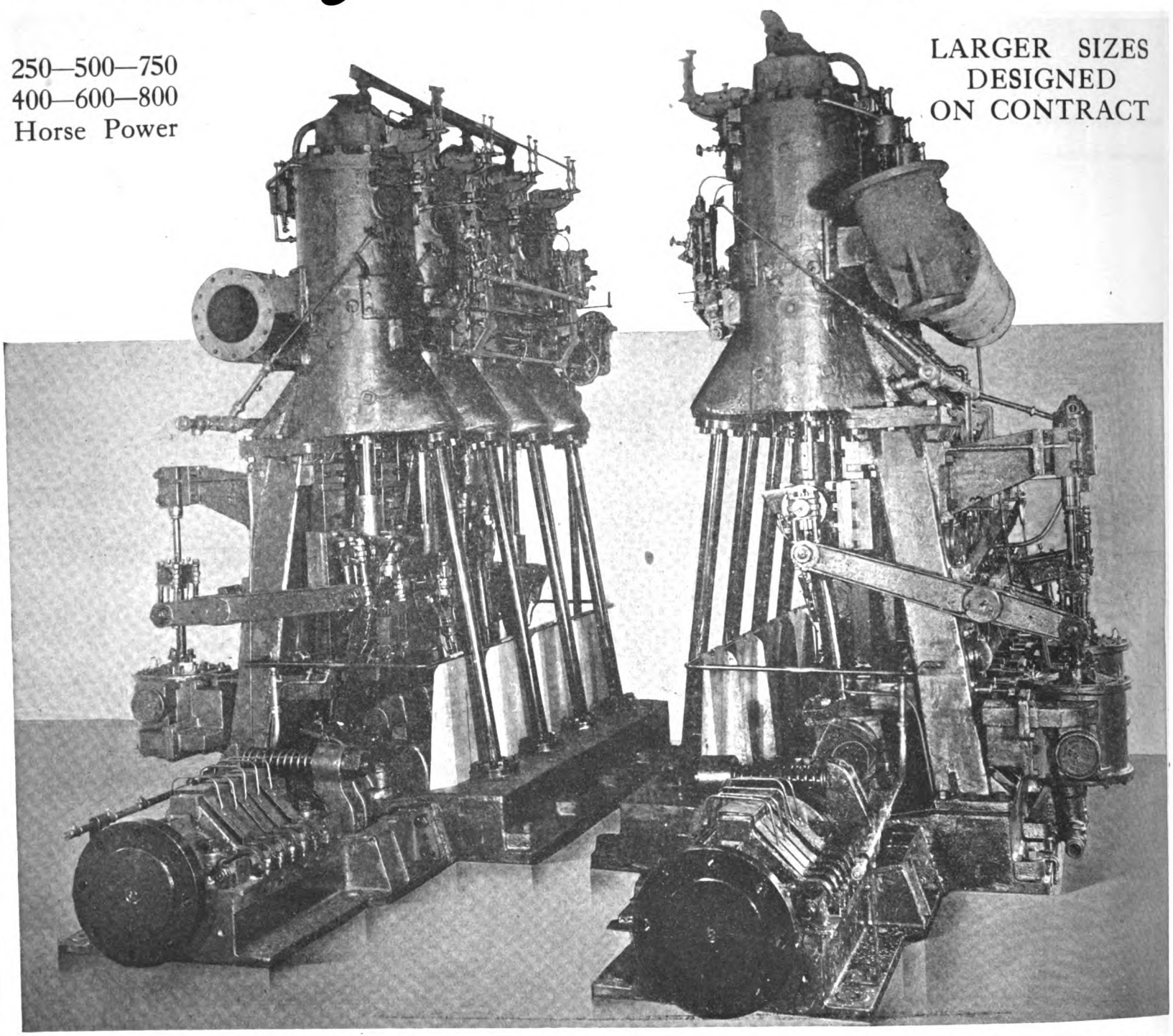

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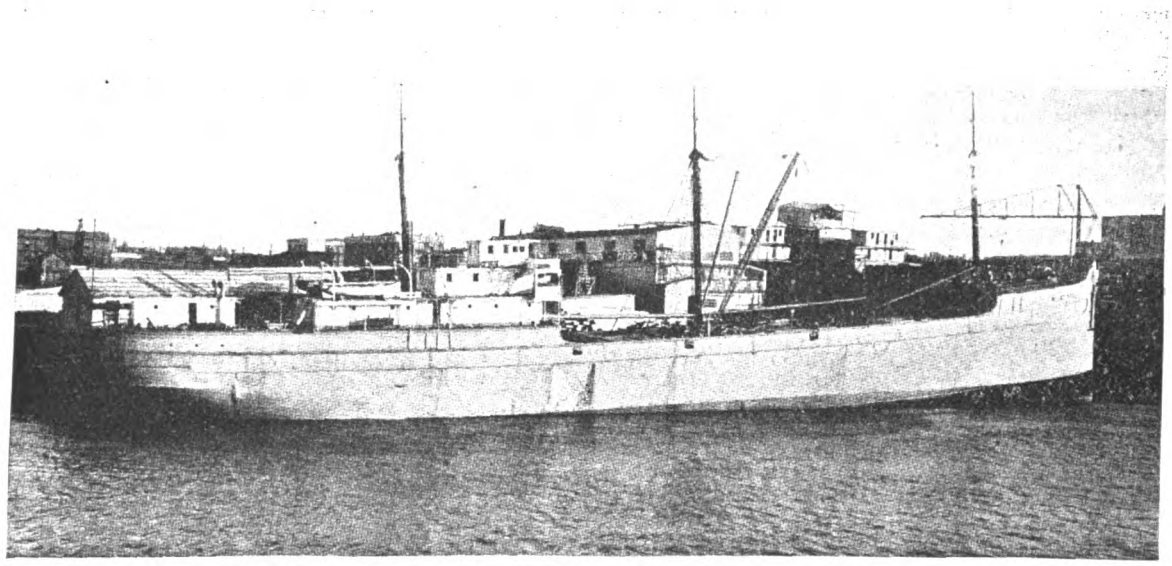

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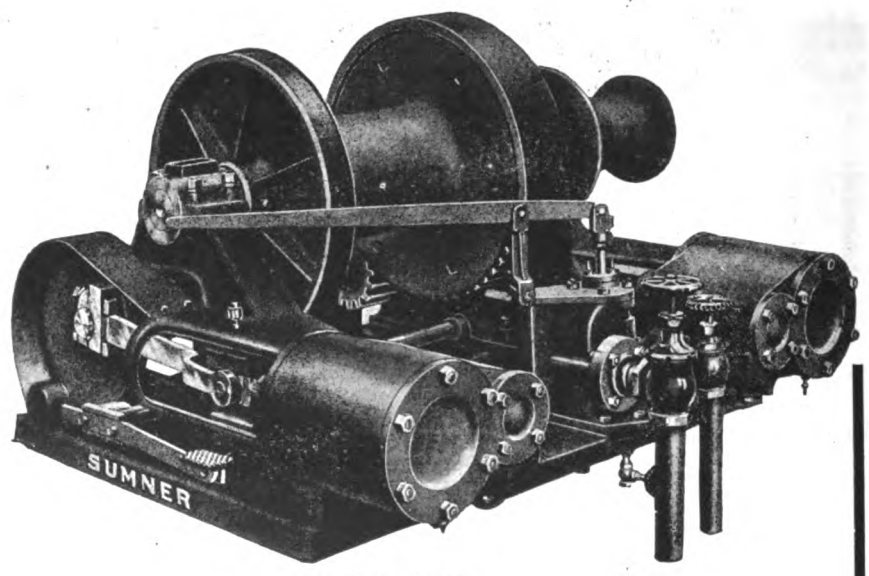

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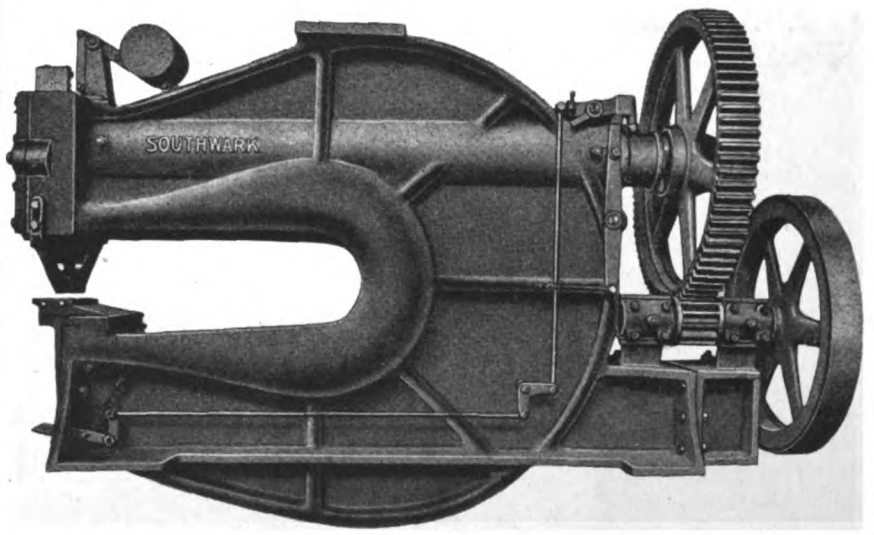

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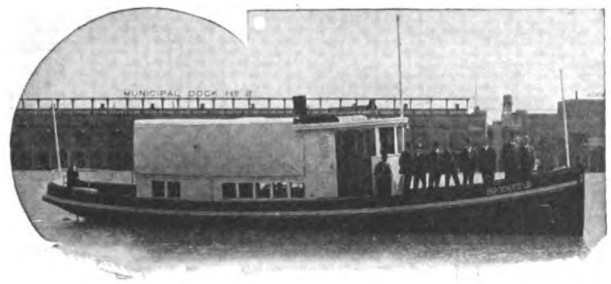

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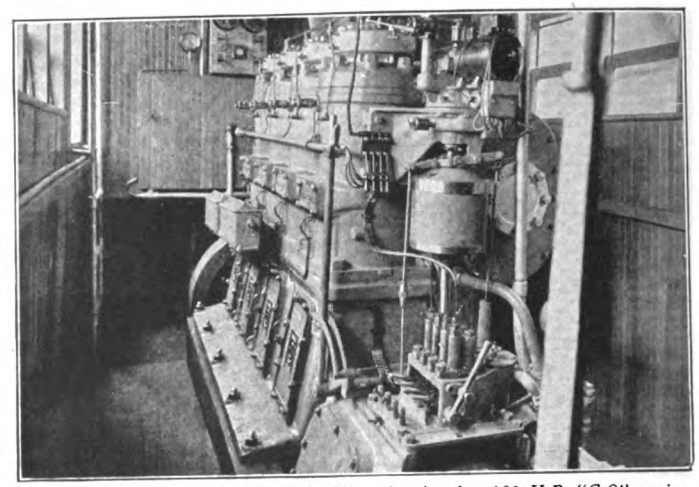

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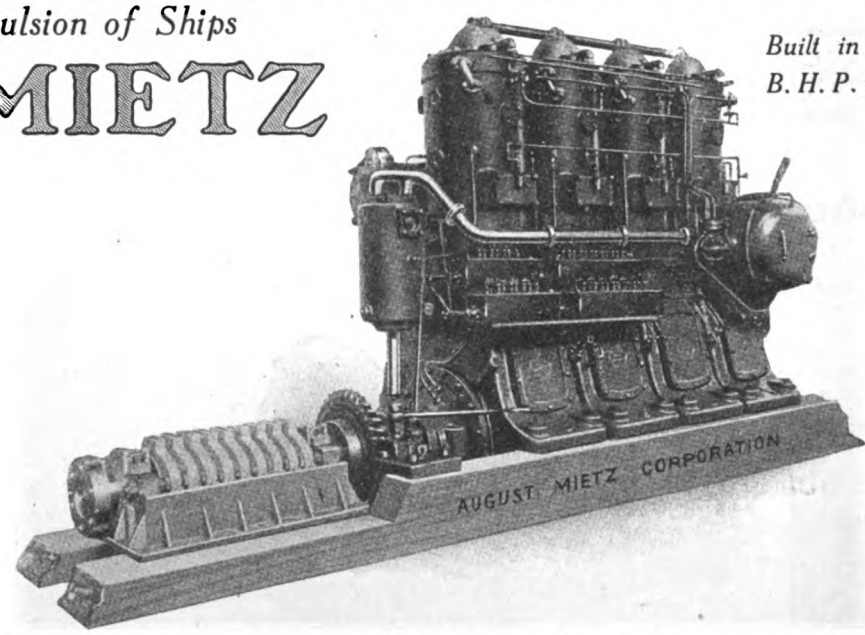

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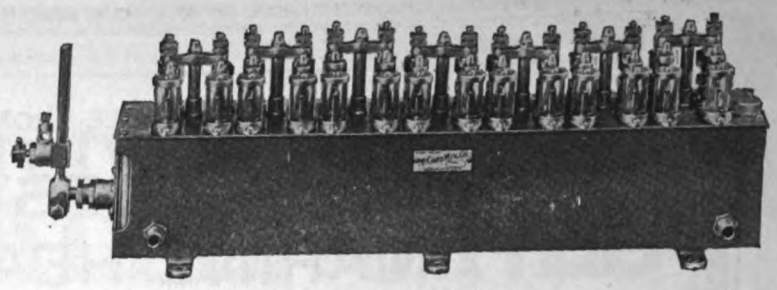

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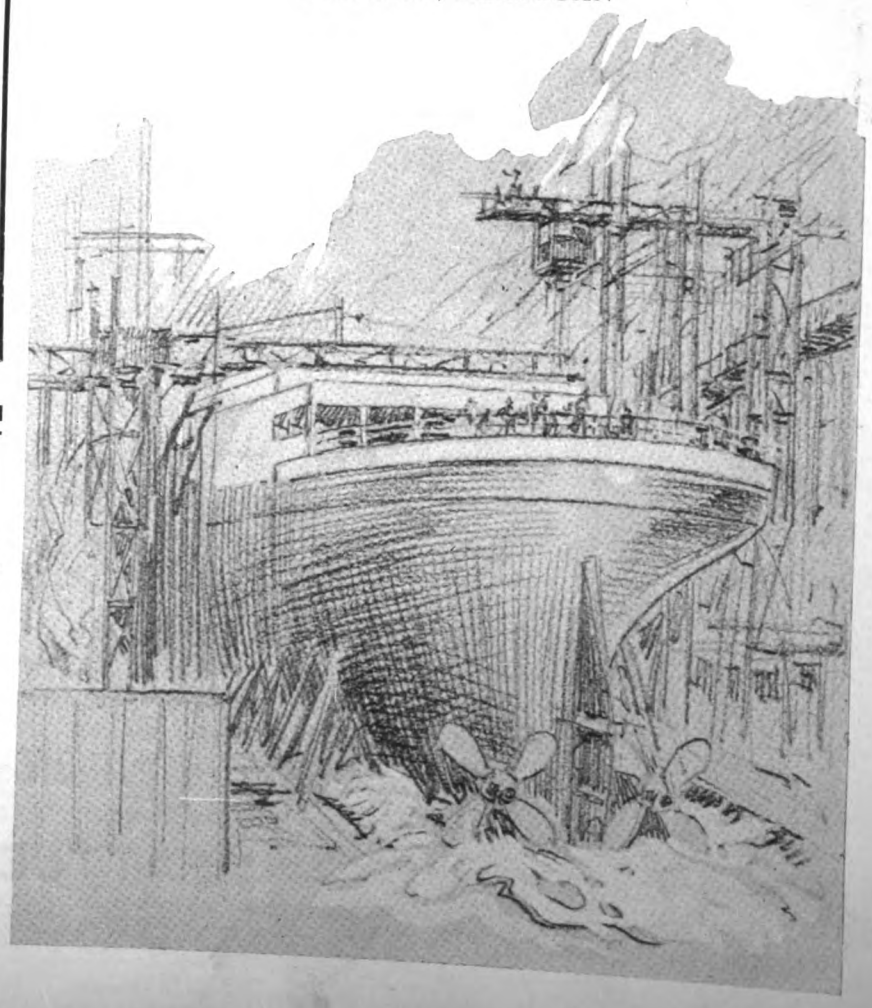

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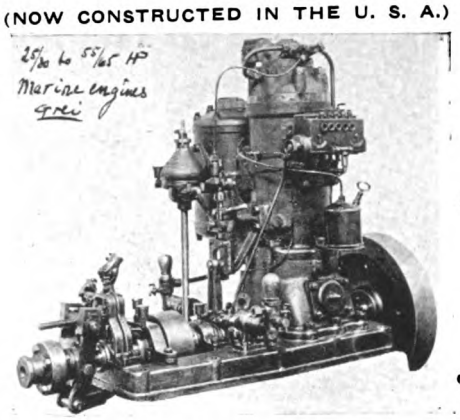

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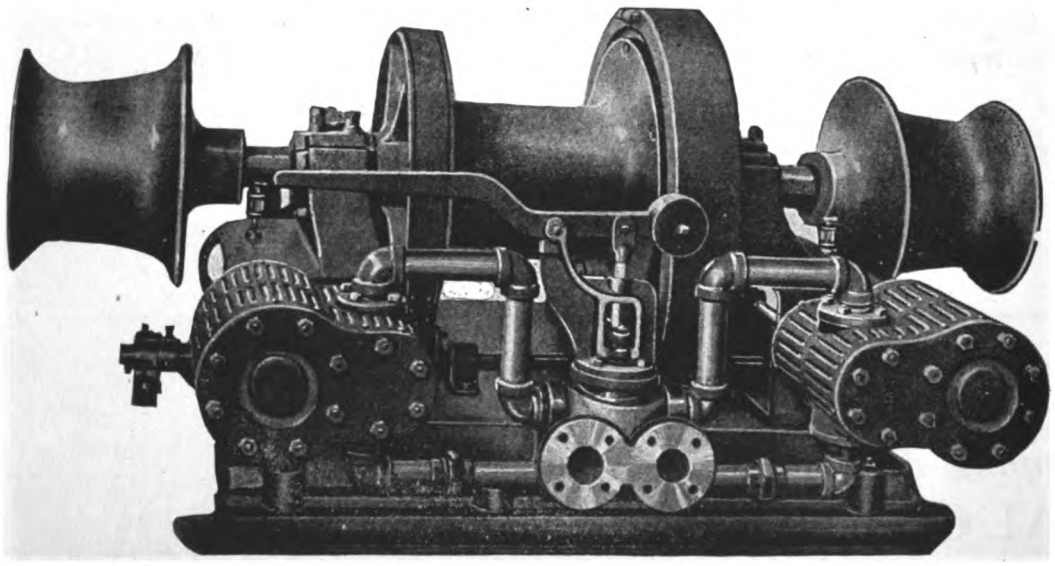

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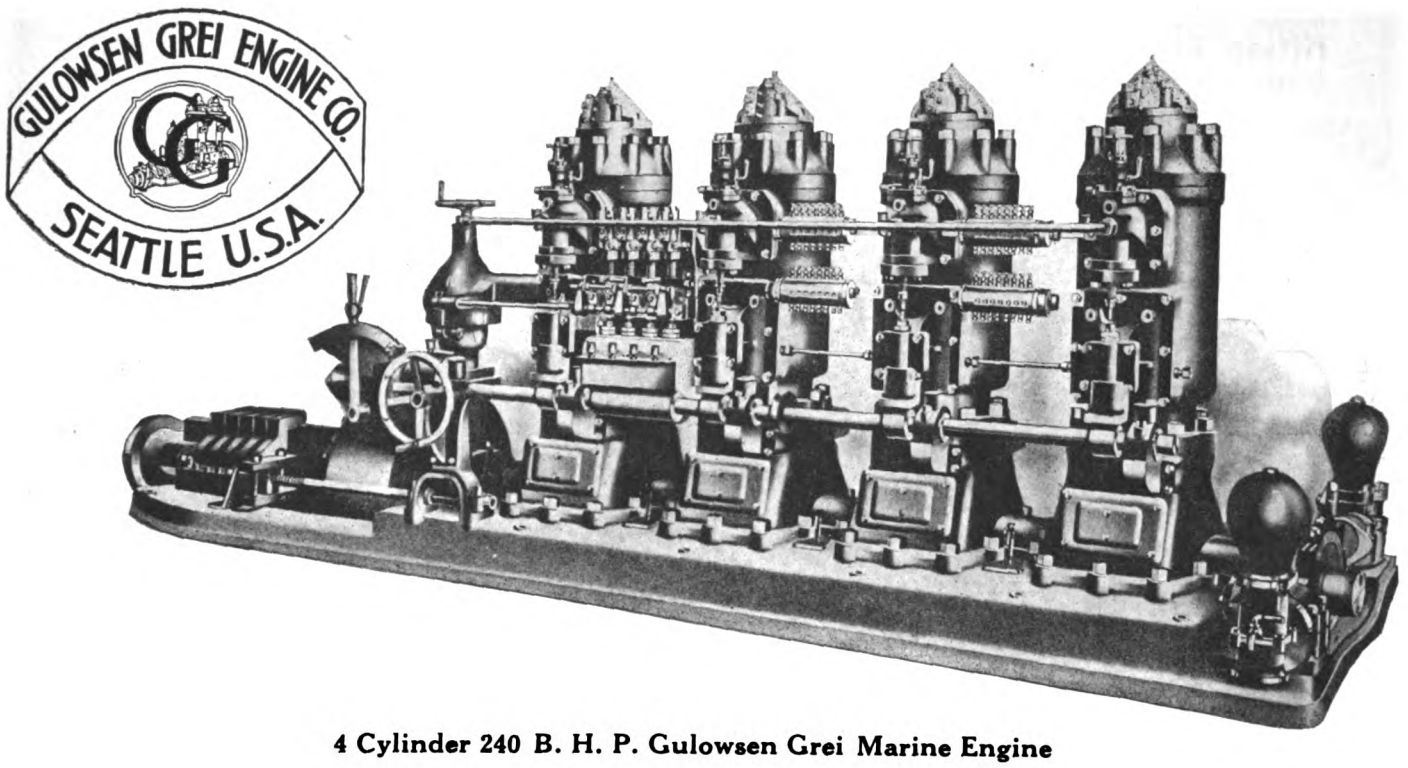

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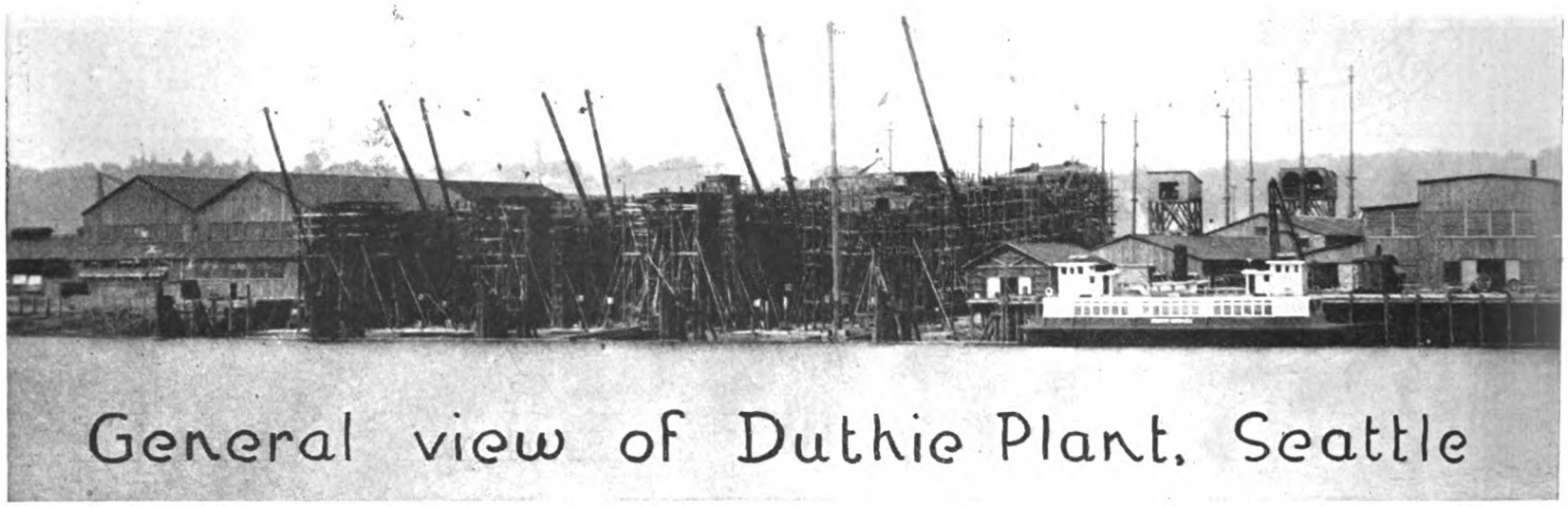
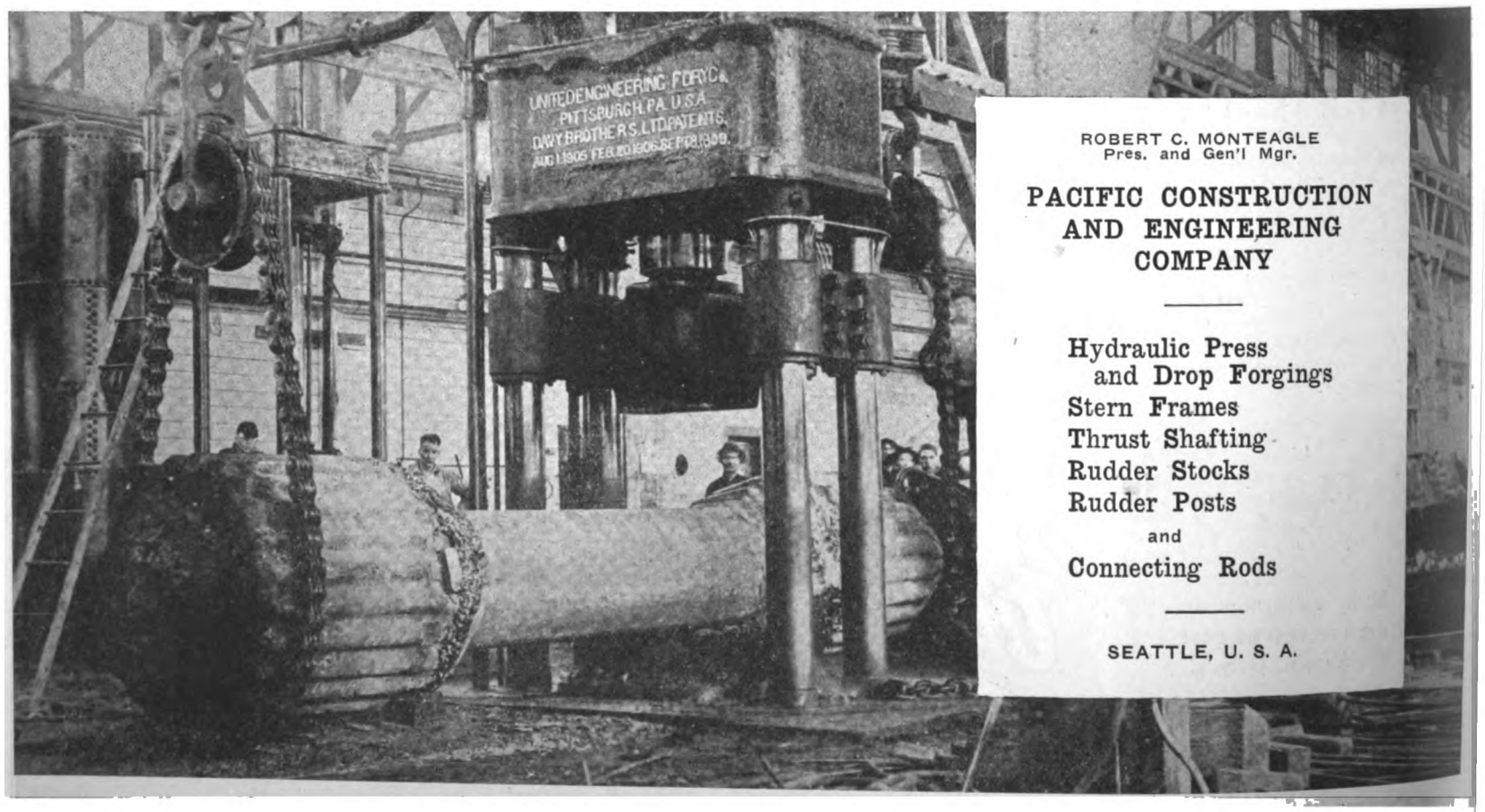


General view of Duthie Plant, Seattle



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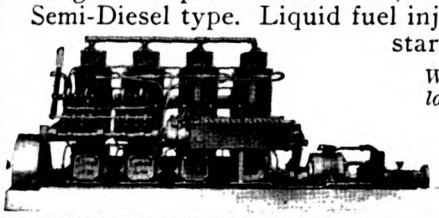

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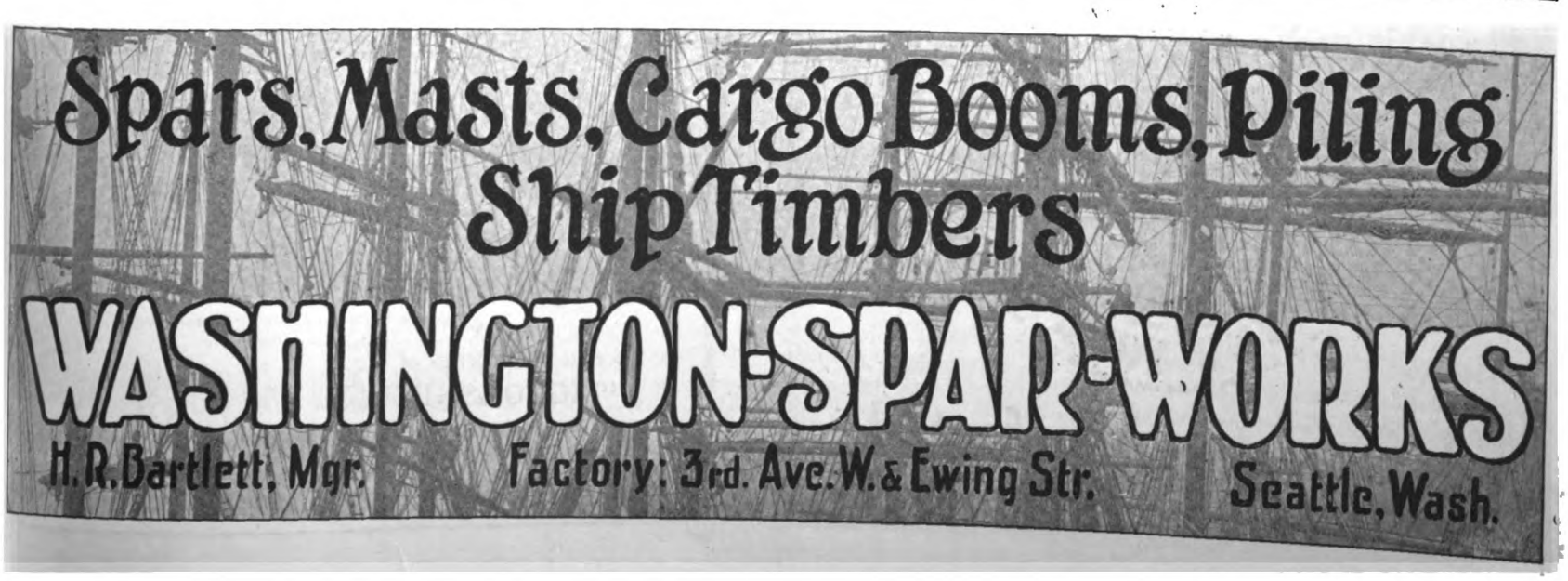

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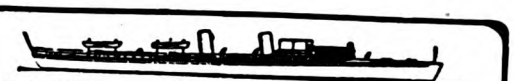

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WE HAVE for immediate delivery one 50 H. P. Burnoil, four cylinder, four cycle engine, brand new. Will operate on heavy oils or kerosene.

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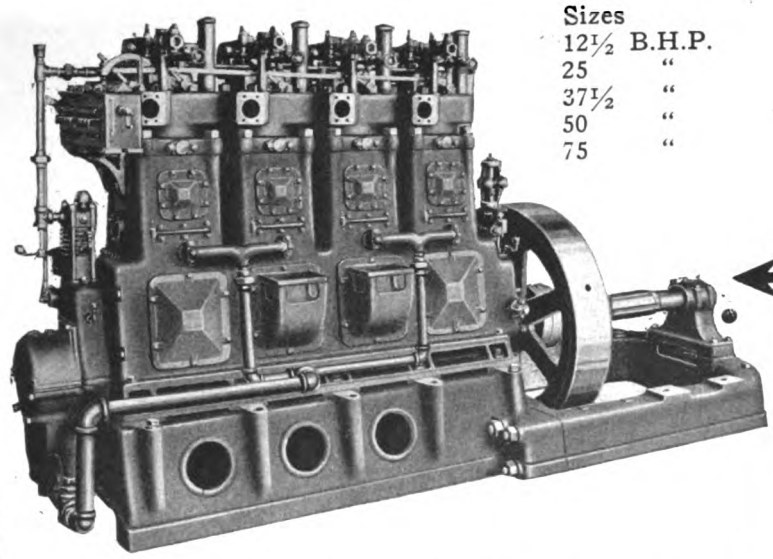

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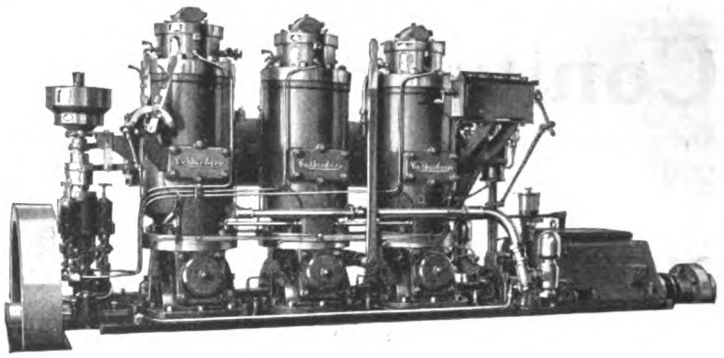

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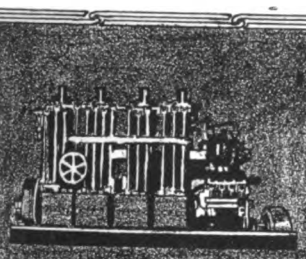

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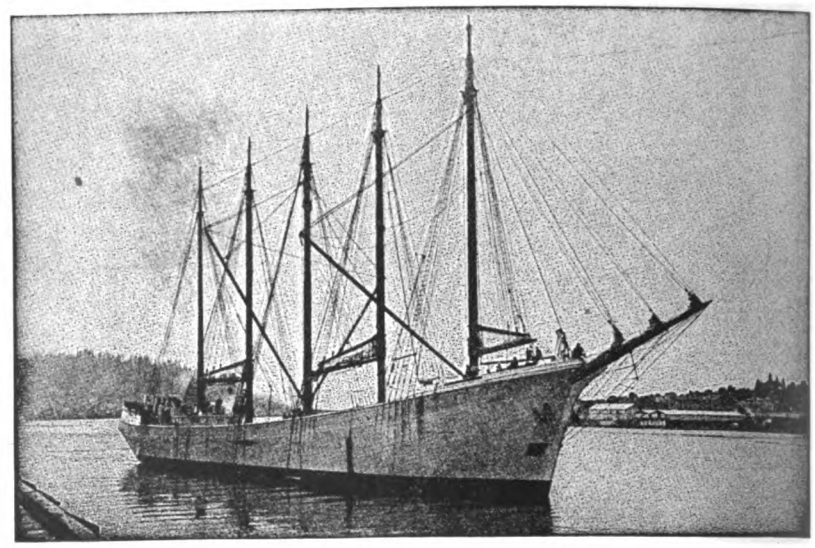

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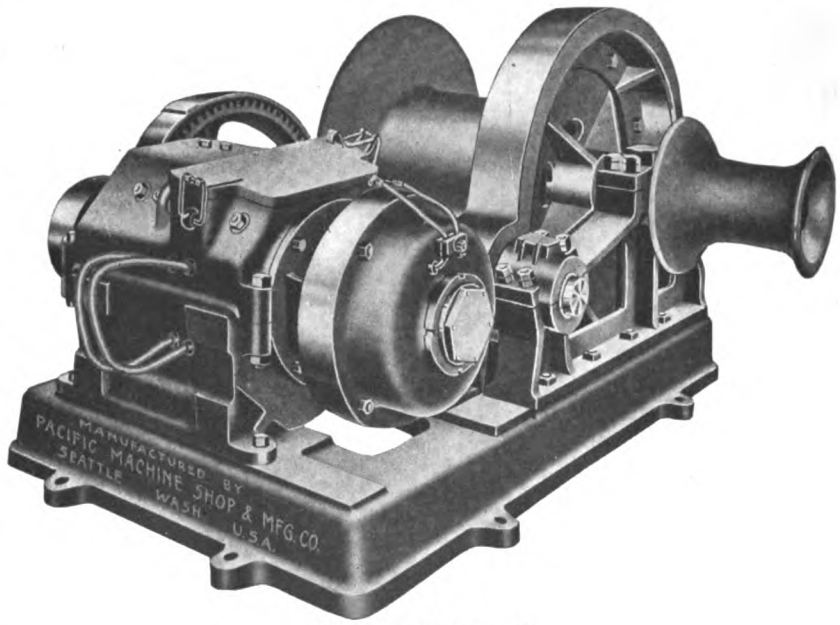

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SERVICE RELIABILITY POWER

ATLAS-IMPERIAL

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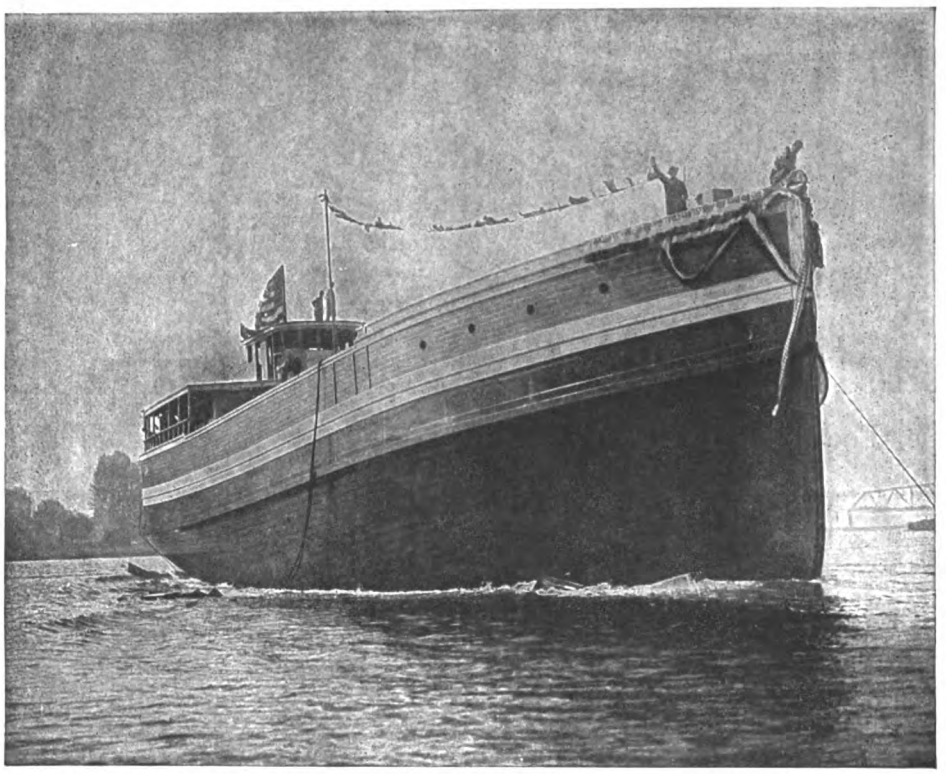
From 110 to 1200 B. H. P.



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Mr. Lee H. Wakefield, the owner of the "Apex" is also the owner of seventeen boats installed with Atlas engines, two of these being Atlas Diesels. Mr. Wakefield selects the Atlas knowing that it is the best engine obtainable and that their service is unequaled.

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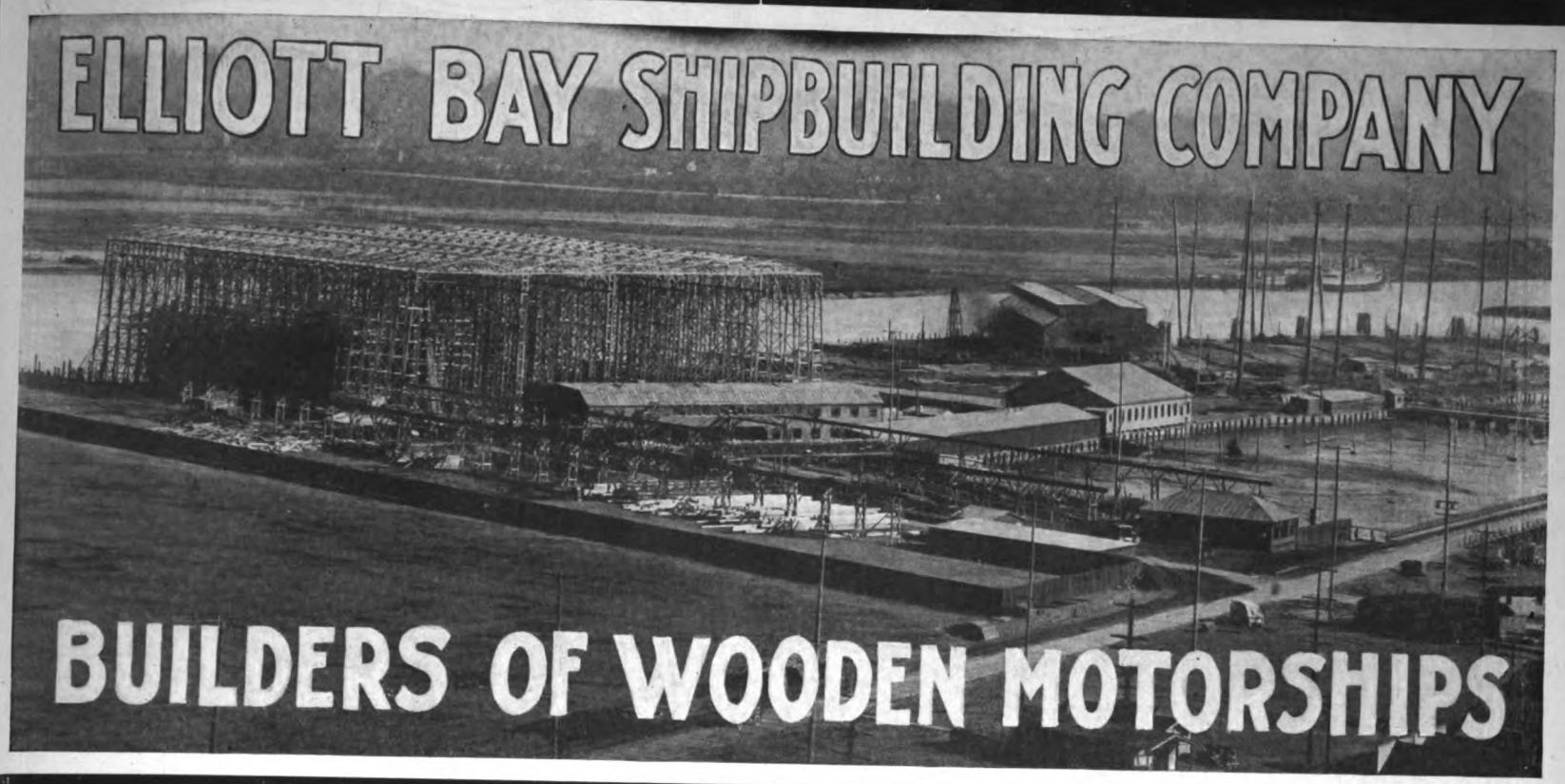

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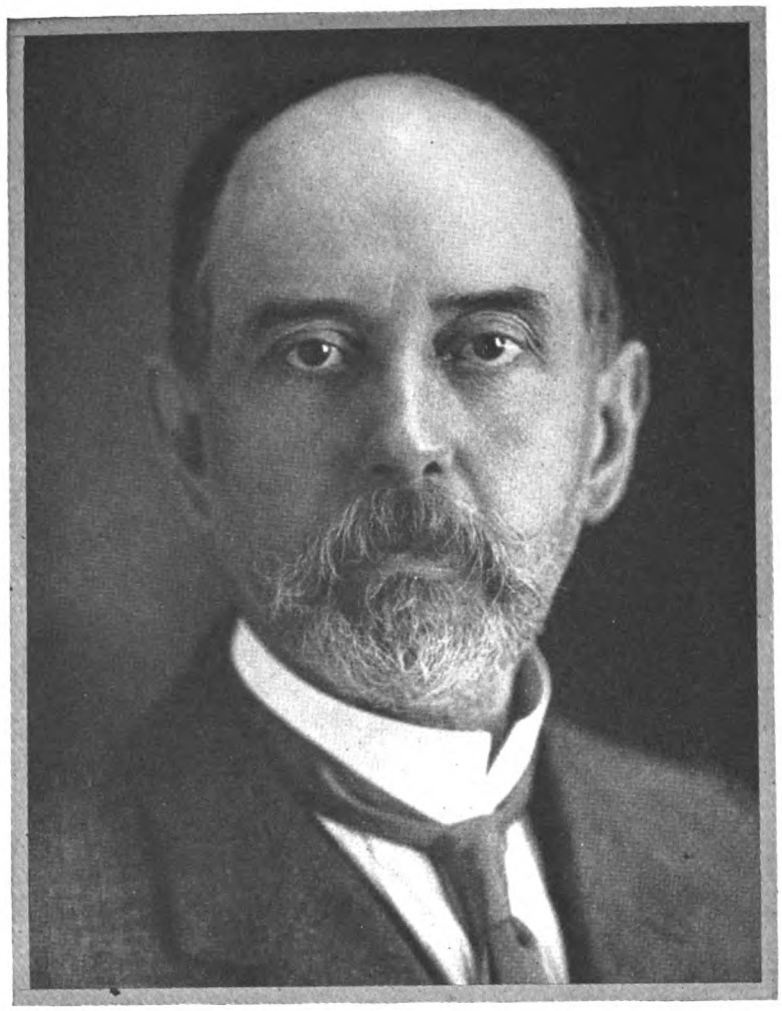

Carl W. Weiss

The Dean of Oil Engineers

THE man who in 1894 designed, built and patented the first practical medium-compression, surface-ignition, two-cycle oil engine. The man who is patentee of practically all the original patents under which engines of this type have been built. ¶ In the twenty-two years following the successful tests of his first engine of the "Weiss-type," this man designed and superintended the construction of more than 300,000 H. P. kerosene and oil engines marketed as "Mietz & Weiss" engines. These engines are in successful operation the wide world over. Every engine designed by Carl W. Weiss has been a commercial success.

Today he is Vice-President and Chief Engineer of The Weiss Engine Company. All his wonderful wealth of knowledge, of practical manufacturing experience, of hard commercial common sense, is embodied in the new Weiss Engines now coming through production, which are being produced in standardized marine sizes 100 to 800 H. P. Write today for an illustrated, technical description of the new "Weiss-type" engine — it's interesting.

In 1894 the first practical surface-ignition, medium-compression, two-cycle oil engine was designed, built and patented by Carl W. Weiss—hence the term "Weiss-type" as applied to all engines of this class

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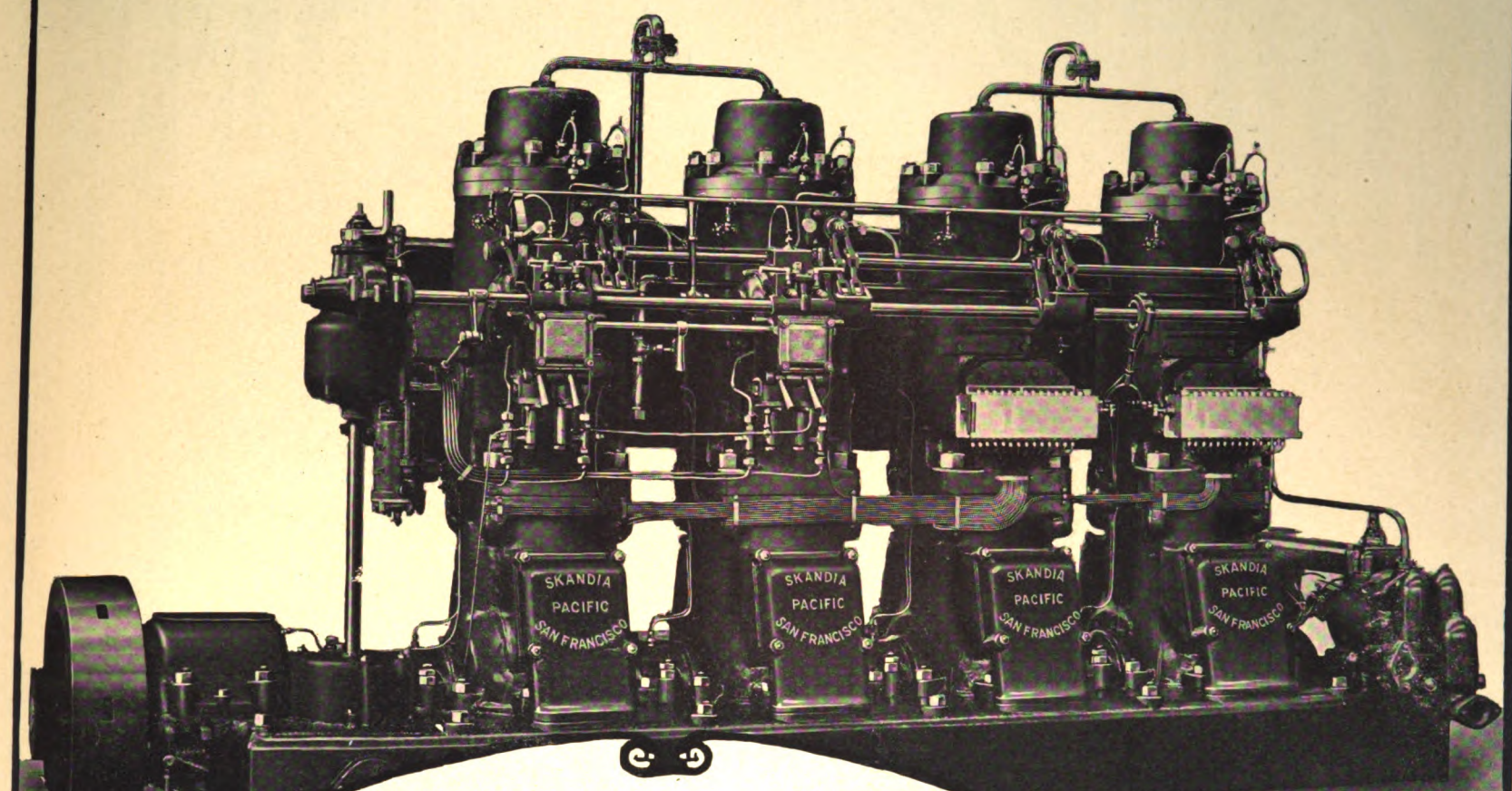

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FOR DIESEL and SEMI-DIESEL ENGINES

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surface Ignition, Semi-Diesel, or Diesel type—use

CALOL DIESEL ENGINE OIL OR CALOL DIESEL ENGINE OIL HEAVY

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication—both vital points in economical operation. And these oils reduce friction and wear to a minimum.

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The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil. Fuel Oil for Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
FOR DIESEL and SEMI-DIESEL ENGINES

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

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SUCCESSORS
TO
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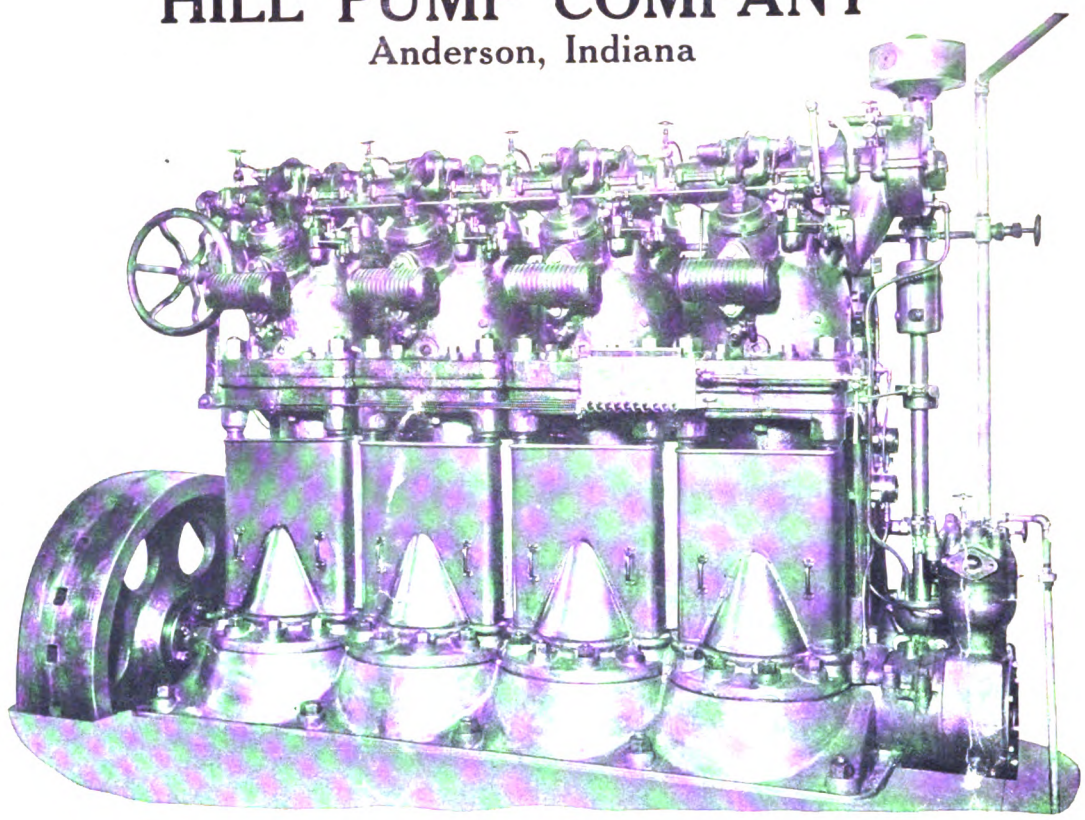

100 BHP Midwest Heavy-Oil Engine, Type VDV

FOUR-CYCLE
25, 50, 75 and 100 BHP Sizes—1, 2, 3 and 4 Cylinders

Ideal Power for Small Commercial Craft and for Marine Auxiliaries

Ignition Solely by the Heat of Compression, without Air-injection, Magneto, Spark-Plug, Electric-System, Hot-Bulb, Tube, Ball, Plate, or other Heated Metallic Surface

No Carburetor or High Pressure Air Compressor

ALSO BUILDERS OF
MIDWEST and WERK-SPOOR
MARINE DIESEL ENGINES

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BOLINDER'S

550,000 B. H. P. of Bolinder's Engines Now in Use in All Parts of the World

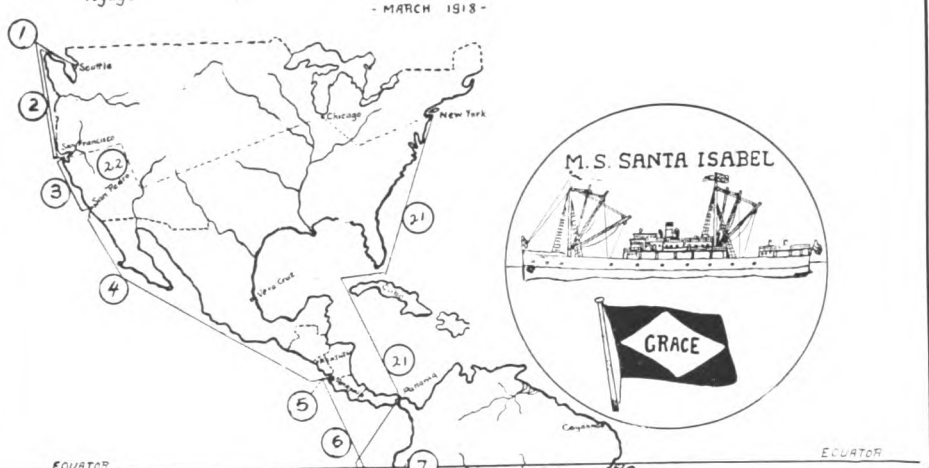
Present Sales and Yearly Output 100,000 B.H.P.

M.S. SANTA ISABEL.

Drawn by C. B. DeBernardi - Chief Engr.

Voyage No. 1

- MARCH 1918 -



Description of voyage #1 - "Santa Isabel"

1 Sailed San Francisco Jan 25 - Arrived Seattle Jan 31 -
2 Sailed Seattle Feb 6 Arrived San Francisco Feb 10 -
3 Sailed San Fran. Feb 14 Arrived San Pedro Feb 16 -
4 Sailed San Pedro Feb 27 - Arrived Amapala Mar 12 -
5 Sailed Amapala Mar 14 - Arrived Acajutla Mar 15 -
6 Sailed Acajutla Mar 15 - Arrived Payta March 23 -
7 Sailed Payta Mar 23 - Arrived Talara Bay Mar 24 -
8 Sailed Talara Bay Mar 27 - Arrived Eten March 28 -
9 Sailed Eten March 30 Arrived Salaverry Mar 31
10 Sailed Salaverry Mar 31 - Arrived Samanco April 1 -
11 Sailed Samanco April 1 - Arrived Callao April 2
12 Sailed Callao April 4 - Arrived Mollendo April 7 -
13 Sailed Mollendo April 8 - Arrived Arica April 9 -
14 Sailed Arica April 9 - Arrived Iquique April 10 -
15 Sailed Iquique April 11 - Arrived Antofagasta April 12 -
16 Sailed Antofagasta April 13 - Arrived Coquimbo April 14 -
17 Sailed Coquimbo April 16 - Arrived Valparaiso April 18

- Return Voyage via New York -

18 Sailed Valparaiso April 19 - Arrived Antofagasta April 23
19 Sailed Antofagasta April 25 Arrived Arica April 27
20 Sailed Arica April 27 Arrived Balboa C.Z. May 9 -
Entered canal May 10 - Left canal May 10 - 3.30 P.M.
21 Sailed Cristobal May 10 - Arrived New York May 23d

Detentions at sea - none Detentions in port, At San Pedro, Cal, discharged cargo and dry-docked to repair outboard shaft coupling
Time lost 11½ days
Detentions at any port account of repairs to Engines or Cargo hoisting machinery. None
Distance covered - 13 850 Miles
Time consumed Four months (or 120 days

C B DeBernardi
Chief Engr.

The log pictured herewith is from an average voyage of one of 4 sister motorships all equipped with twin sets, 320 B. H. P. Bolinder Fuel Oil Engines and emphasizes the well-established reputation of the Bolinder Engine.

ENGINED WITH TWIN SET OF 320 B. H. P. "BOLINDER" MARINE FUEL-OIL ENGINES.

Present U. S. A. Bolinder Installations 55,000 B.H.P.

Craft under construction and to be fitted with "BOLINDER" Engines in the United States alone aggregate over 145,000 tons; "BOLINDER" Engines now in service, over 12,500

The BOLINDER

THE ENGINE THAT IS NOT A DIESEL
THE ENGINE THAT IS NOT A SEMI-DIESEL
THE ENGINE THAT IS THE BOLINDER
THE STANDARD FOR SURFACE-IGNITION FUEL OIL ENGINES

An example of the ruggedness of the "BOLINDER" Engine was displayed in the case of the M. S. "ASTRI" recently. This vessel encountered a hurricane off Mazatlan and became severely strained, resulting in the flooding of the engine room—the water rising over the tops of the cylinders. After the storm the engine room was pumped out and the engines started, bringing the ship to port under her own power.

HENRY LUND & CO., Marine Building San Francisco CALIFORNIA

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Does Advertising in MOTORSHIP Pay? HERE IS THE ANSWER!

Madison Kipp Lubricator Co.

FORCE FEED LUBRICATORS
Madison, Wisconsin

October 24th, 1918.

Motorship,
South Ferry Bldg.,
New York City.

Gentlemen:

In October, 1917, we received the following letter from a firm in Norway:

"Referring to your advertisement in Motoship, we beg you to send us catalog with price, as we are greatly interested in lubricators. Please also state your highest discount to us as resellers."

This led to an interchange of correspondence and we have just received an order from these people amounting to about $2,000 or $3,000. It is very likely that we will be able to export the shipment, due to the fact that they have already obtained import license for the lubricators and we have made application for export license from this end.

We are passing this information to you, feeling sure that it will be of interest.

Yours very truly,

MADISON-KIPP LUBRICATOR CO.

TEC:H

Thomas E. Coleman
Vice President

GOOD ADVERTISING means the establishment of profitable new business connections—such as the above. Often they eventually result in large repeat orders. Advertising will not keep a customer—your service must do that—but it will establish the initial connection from which permanent relations grow, and will keep your name and trade mark continually before the purchaser.

DO YOU ADVERTISE SUFFICIENTLY?

Rates for Advertising in "Motorship" Can Be Obtained from Our Advertising Depts.

L. C. Smith Building
SEATTLE, WASH.

South Ferry Building
NEW YORK, N. Y.

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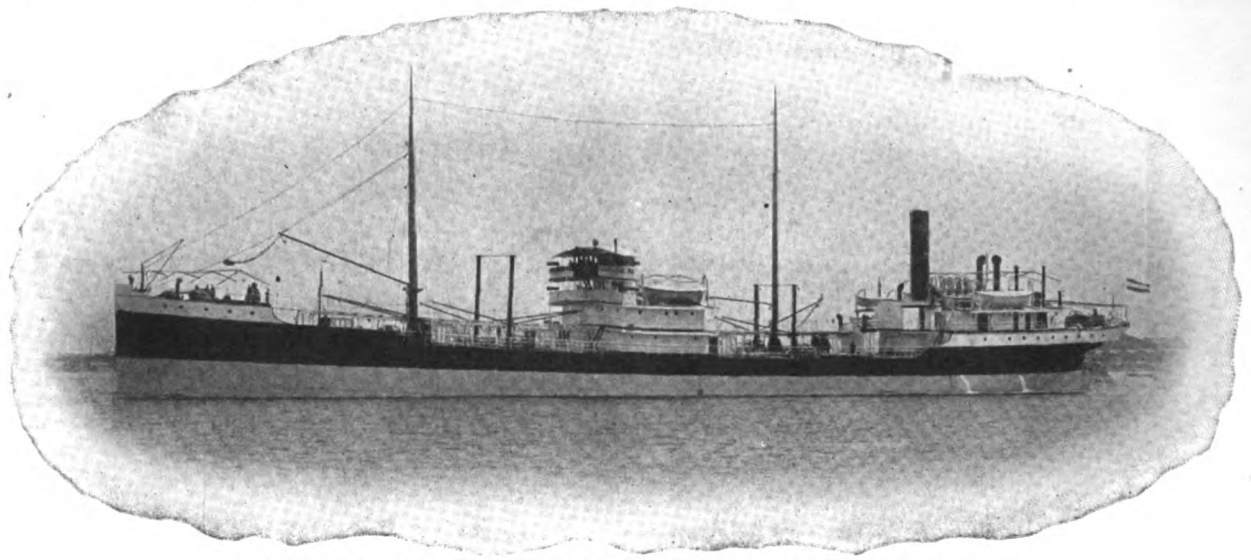
OIL FUEL

THE FUEL OF THE 20th CENTURY

The Asiatic Petroleum Co., Ltd.
are prepared to Supply OIL FUEL at

Adelaide
Alexandria
Balik Pappan
Bangkok
Batavia
Bombay
Calcutta
Cape Town
Colombo
Curacoa
Hong Kong
Karachi
La Guayra
Lisbon
Madras
Maracaibo
Melbourne
Montreal
Nagasaki
Palembang
Panama Canal (both ends)
Pangkalan Berandan
Penang
Portland Oregon, S. S. A.
Port Said
Puerto Cabello
Puloe Samboe
Rotterdam
Sabang
Saitozaki
San Francisco
San Pedro
Seattle, Washington, U. S. A.
Shanghai
Singapore
Soerabaya
Suez
Sydney
Tampico
Tarakan
Thameshaven
Trinidad
Vancouver



ONE OF OUR FLEET OF OIL-CARRYING DIESEL-ENGINED MOTORSHIPS

Note.—During the war it is not possible to keep stocks at some of the above-named ports. It is therefore advisable for intending buyers to enquire whether stocks are available.

Buyers desiring information regarding supplies of and prices for **OIL FUEL** for use in Internal-combustion Engines or for other purposes should apply to **THE ASIATIC PETROLEUM COMPANY, LIMITED**, at the above address.

The Asiatic Petroleum Company also supply **KEROSENE OIL** for use in the smaller Internal-combustion Engines and are prepared to supply **PETROLEUM SPIRITS, LUBRICATING OILS, WAX** and **GREASES** in all far Eastern Markets.

THE ASIATIC PETROLEUM CO., LTD.

ST. HELEN'S COURT, GREAT ST. HELENS
LONDON, E. C., ENGLAND

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CAMMELL LAIRD & CO.

LIMITED

BIRKENHEAD

MARINE AND LAND OIL-ENGINES

(CAMELLAIRD—FULLAGAR SYSTEM)

ADVANTAGES CLAIMED

50% more Power in same space over other engines
Low Revolutions and High Propeller Efficiency
Even Turning Moment and Perfect Balance
No direct stresses on framing as Piston Loads are Balanced
Loads on all pins Reversible, Ensuring Efficient Lubrication
Only one Working Valve per Cylinder. No Vibration

SIMPLE SILENT RELIABLE

Suitable for all Classes of Merchant Vessels

LICENSES GRANTED TO MANUFACTURE

LONDON 3 Central Buildings, Westminster, S. W. 1

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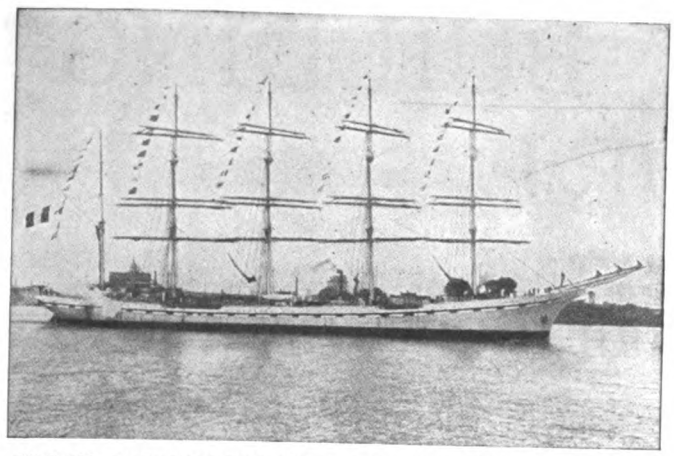
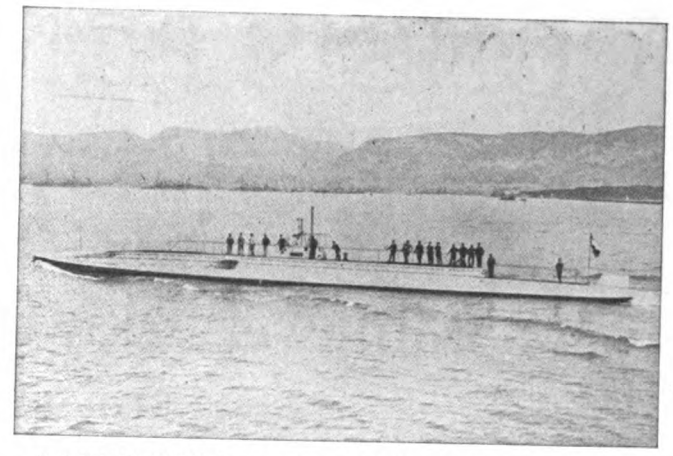


"LA FRANCE," FITTED WITH TWO 900 B. H. P. SCHNEIDER. DIESEL MARINE ENGINES

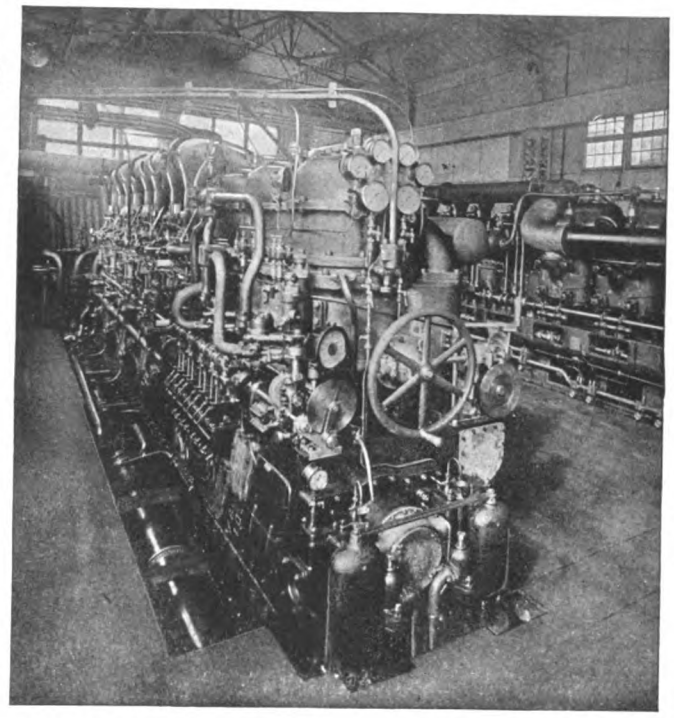


A LARGE SUBMARINE BUILT AND DIESEL-ENGINED BY SCHNEIDER & CIE.

POWERS PER ENGINE

700
1500
and
2400
H. P.

For ONE Motor
(Submarine Type)



A SCHNEIDER 1500 H. P. DIESEL MARINE ENGINE FOR SUBMARINES

LIGHT WEIGHT
(Only 46 lbs. per B. H. P.)

STRONGLY BUILT

EFFICIENCY
(0.400 lb. of Fuel Oil per B. H. P.)

Two and Four-Cycle Diesel Engines for War and Merchant Ships

SCHNEIDER & CIE

HEAD OFFICE AND GENERAL MANAGEMENT
42 RUE D'ANJOU, PARIS (8E)
FRANCE

NEW YORK OFFICE
21 E. 40th Street

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CONSISTENT BUILDING RECORD

OF

The Skinner & Eddy Corporation—Plant No. 1

FOR TWO YEARS

FROM

3 Building Births for the First Year
5 Building Births for the Second Year

Also launched S. S. West Cressy, first ship from Plant No. 2 on September 21st, 60 working days from keel to launching

Name	D.W.T.	Keel Laid	Launched	Delivered	Keel to Launch Wkg. Days	Keel to Launch Cal. Days	Launch to Delivery Wkg. Days	Launch to Delivery Cal. Days	Total Keel to Deliv. Wkg. Days	Total Keel to Deliv. Cal. Days
NIELS NIELSEN	8800	May 2, '16	Sept. 21, '16	Nov. 9, '16	119	143	41	50	160	193
HANNA NIELSEN	8800	May 11, '16	Oct. 21, '16	Dec. 22, '16	137	164	51	53	188	227
LUISE NIELSEN	8800	Sept. 23, '16	Jan. 23, '17	Mar. 10, '17	100	133	39	47	139	180
S. V. HARKNESS	10000	Aug. 15, '16	Mar. 22, '17	May 8, '17	188	220	40	48	223	268
JOSIAH MACY	10000	Oct. 23, '16	Apr. 21, '17	June 9, '17	151	180	40	50	191	230
STOLT NIELSEN	8800	Jan. 30, '17	May 22, '17	June 26, '17	96	113	28	36	124	149
JEAN SKINNER	8800	Mar. 27, '17	June 30, '17	Aug. 20, '17	81	96	41	52	122	148
LT. DeMISSIESSY	8800	Apr. 25, '17	Aug. 16, '17	Sept. 19, '17	94	114	27	36	121	150
INDIANA	8800	May 25, '17	Sept. 15, '17	Oct. 20, '17	93	114	29	36	122	150
WEST HAVEN	8800	Aug. 13, '17	Nov. 1, '17	Dec. 24, '17	67	81	43	54	110	135
SEATTLE	8800	Aug. 21, '17	Nov. 24, '17	Jan. 5, '18	80	96	33	43	113	139
TRONTOLITE	10000	July 3, '17	Dec. 15, '17	Feb. 2, '18	138	166	39	50	177	216
ABSAROKA	8800	Sept. 5, '17	Dec. 22, '17	Feb. 12, '18	91	109	41	53	132	168
WEST ARROW	8800	Sept. 20, '17	Jan. 19, '18	Feb. 26, '18	100	122	31	39	131	161
WESTLAKE	8800	Nov. 8, '17	Feb. 9, '18	Mar. 9, '18	76	94	23	29	99	123
CANOGA	8800	Dec. 1, '17	Feb. 26, '18	Mar. 23, '18	71	88	21	26	92	114
OSSINEKE	8800	Dec. 26, '17	Mar. 14, '18	Apr. 13, '18	65	79	25	31	90	110
WESTERN QUEEN	8800	Jan. 2, '18	Mar. 28, '18	Apr. 25, '18	72	88	23	29	95	117
WEST DURFEE	8800	Jan. 25, '18	Apr. 11, '18	May 16, '18	64	76	29	36	93	112
WEST LIANGA	8800	Feb. 14, '18	Apr. 20, '18	May 4, '18	55	65	11	15	66	80
WEST ALSEK	8800	Mar. 4, '18	May 11, '18	June 14, '18	58	68	19	25	77	93
WEST APAUM	8800	Mar. 19, '18	May 23, '18	June 19, '18	55	65	22	28	77	93
WEST COHAS	8800	Apr. 2, '18	June 4, '18	June 29, '18	52	62	21	26	73	88
WEST EKONK	8800	Apr. 16, '18	June 22, '18	July 13, '18	57	67	16	22	73	89
WEST GAMBO	8800	Apr. 25, '18	July 4, '18	July 20, '18	59	70	13	17	72	87
WEST GOTOMSKA	8800	May 16, '18	July 17, '18	Aug. 7, '18	51	62	17	21	68	83
WEST HOBOMAC	8800	May 29, '18	July 27, '18	Aug. 17, '18	49	59	17	21	66	80
WEST HOSOKIE	8800	June 11, '18	Aug. 15, '18	Aug. 29, '18	54	65	11	14	65	79
WEST HUMHAW	8800	June 27, '18	Aug. 28, '18	Sept. 14, '18	51	62	14	17	65	79
WEST LASHAWAY	8800	July 8, '18	Sept. 12, '18	Sept. 28, '18	55	66	13	17	68	83
WEST LOQUASSUCK	8800	July 20, '18	Sept. 21, '18		50	64				

SKINNER & EDDY
CORPORATION
BUILDERS OF STEEL STEAMSHIPS
SEATTLE WASHINGTON

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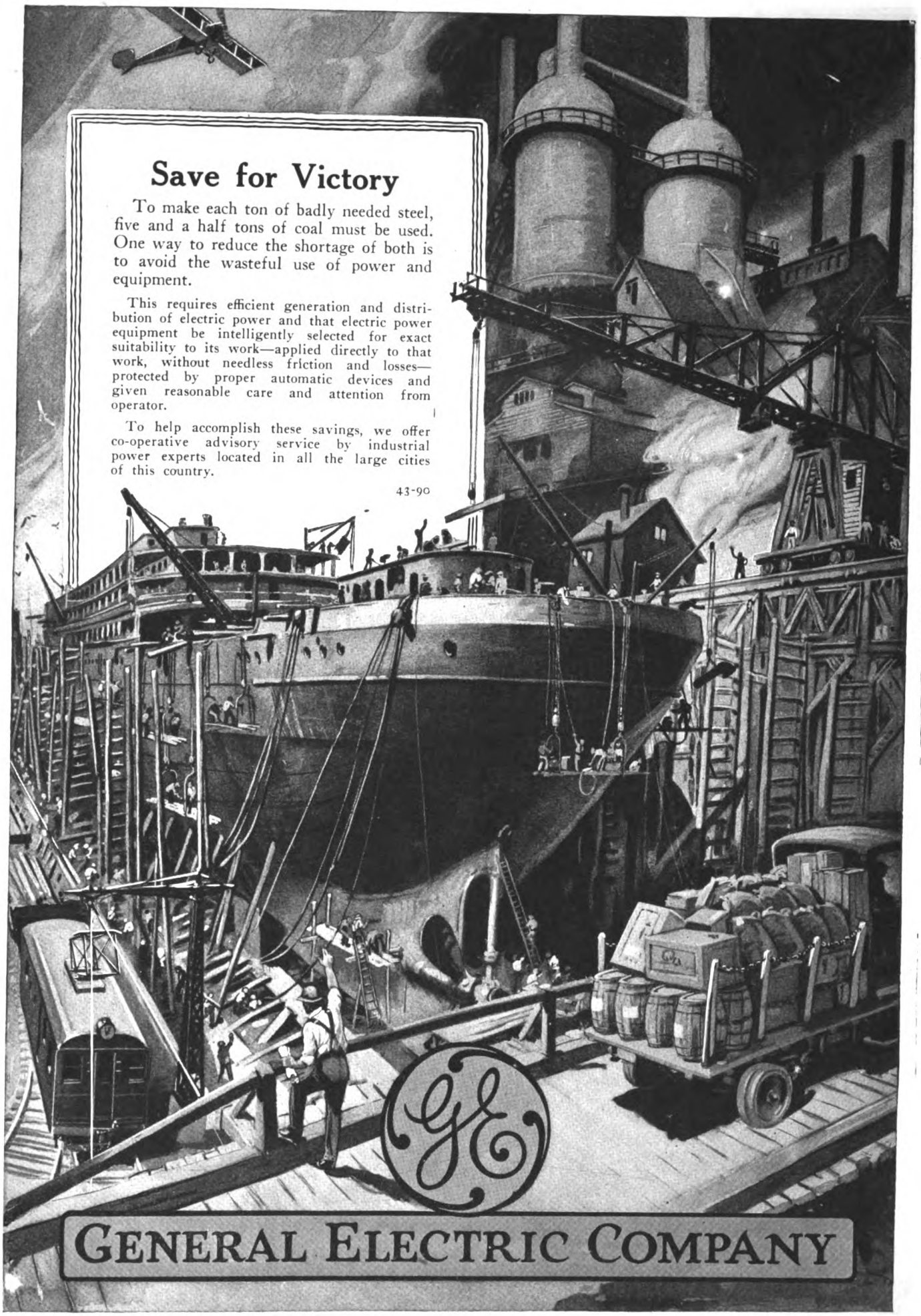

PRINCIPAL OFFICE, SCHENECTADY, N. Y. SALES OFFICES IN ALL LARGE CITIES

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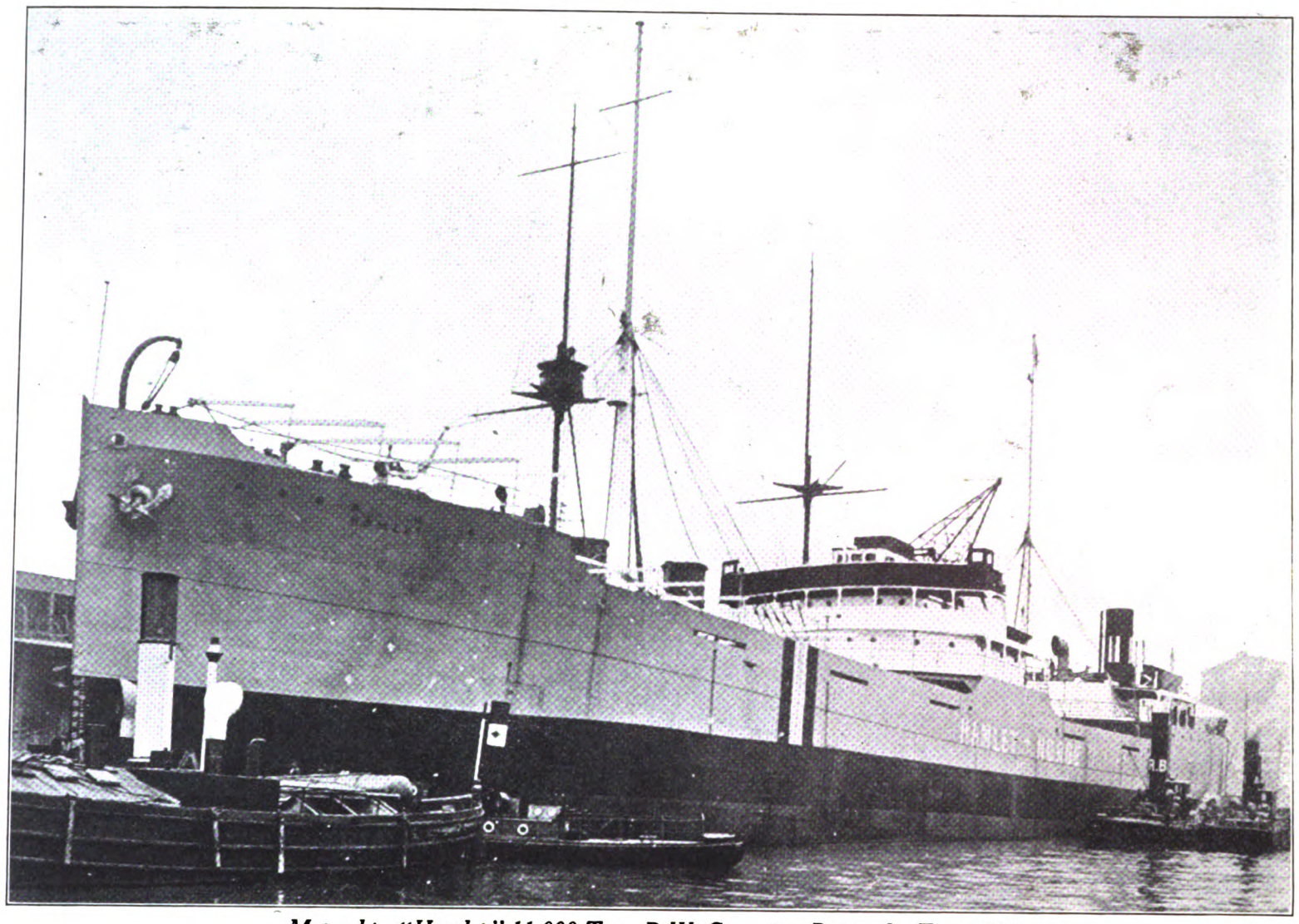
McINTOSH & SEYMOUR Heavy Duty Diesel Type Marine Engines

All Four-Cycle Six Cylinder and Directly Reversible



Sizes Available
300 B. H. P.
500 B H. P.
750 B. H. P.
1000 B. H. P.
1350 B. H. P.

Motorship "Hamlet," 11,000 Tons D.W. Capacity, Driven by Two 1650 B. H. P. Diesel Type Marine Engines Built in Our Swedish Factory

149 BROADWAY
NEW YORK CITY

McINTOSH & SEYMOUR CORPORATION

Main Office and Works: AUBURN, N. Y.

815 Sheldon Bldg.
San Francisco, Cal.

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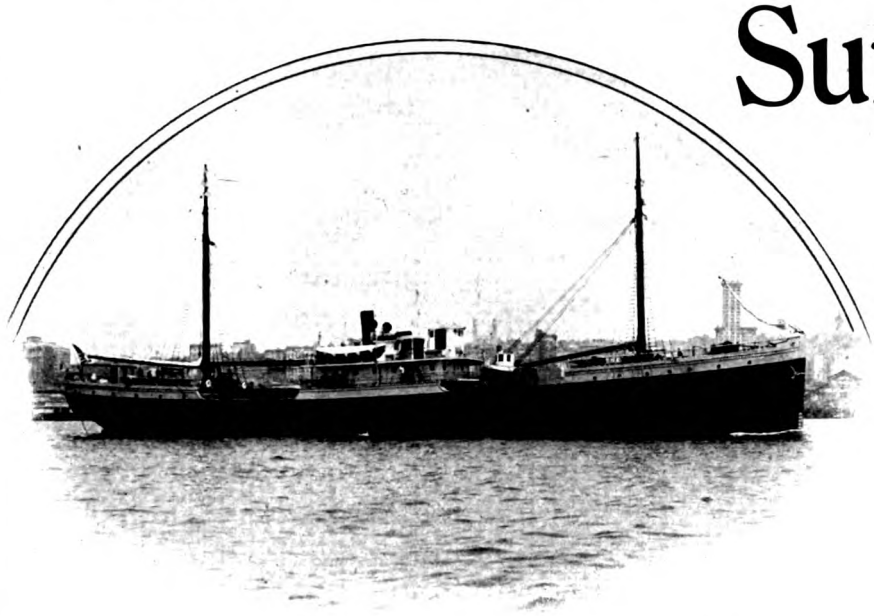
"The Dow-Diesel Engines Surprised Me"



FULL POWERED MOTORSHIP "LIBBY MAINE"

—said Captain Herre, master of the motorship "Libby Maine," on returning from his first voyage to Bristol Bay, Alaska. "I was always a little prejudiced against Diesel engines, but the Dow-Diesel made good in every way."

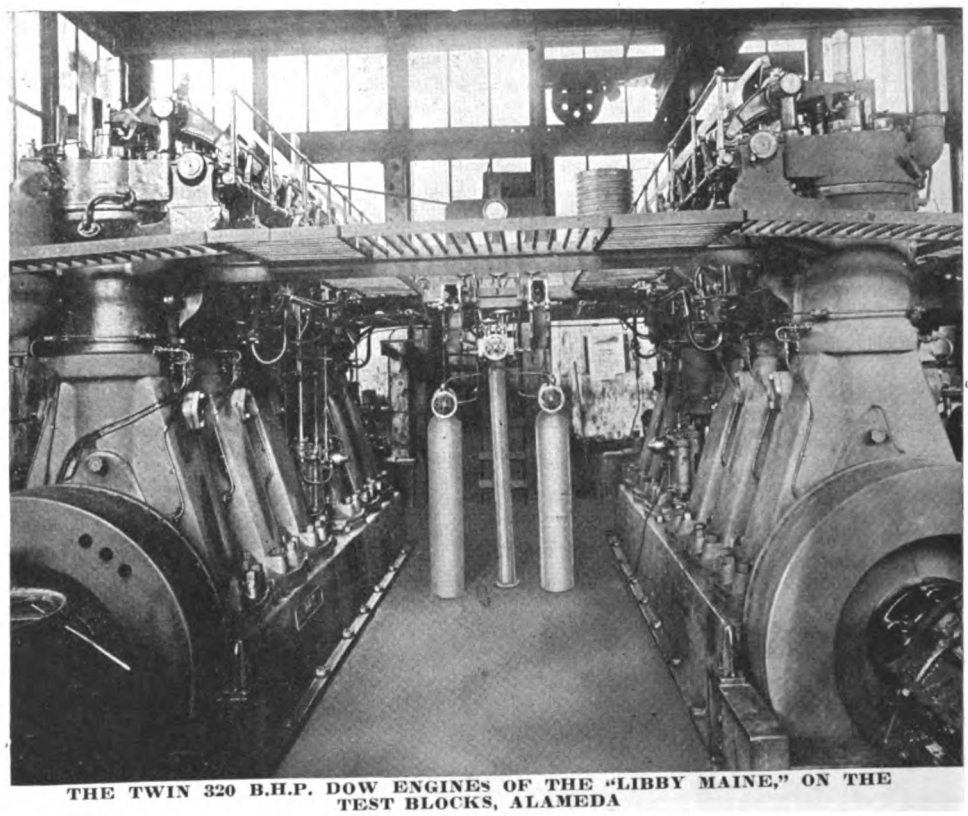
The Maiden Voyage of the Full-Powered Motorship "LIBBY MAINE" equipped with two 320 b.h.p.

Dow Full-Diesel Type Engines

demonstrated that the

DOW-DIESEL

engines are economical, thoroughly reliable and efficient and that they ARE a success.



THE TWIN 320 B.H.P. DOW ENGINES OF THE "LIBBY MAINE," ON THE TEST BLOCKS, ALAMEDA

Dow Pump & Diesel Engine Co.

Alameda, California

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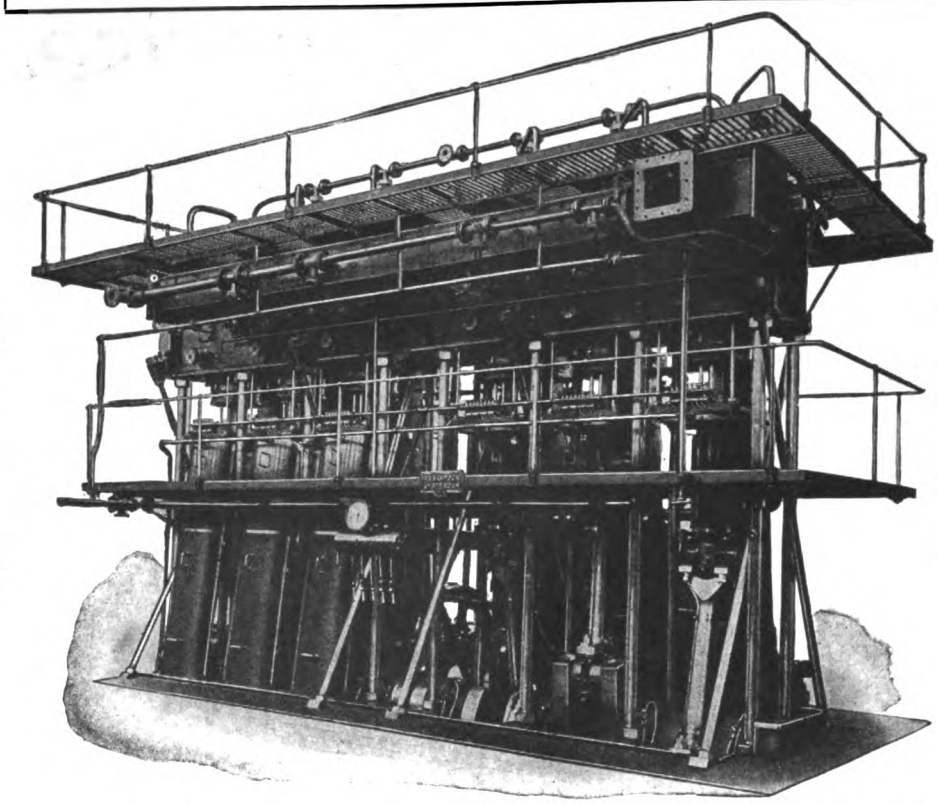
AMSTERDAM WERKSPOOR HOLLAND

THE SUPEREMINENT ATTAINMENT OF MARINE OIL-ENGINE DESIGN



U. S. A. Licensees

MIDWEST ENGINE COMPANY
Successors to
LYONS-ATLAS CO., INDIANAPOLIS, IND.

SKANDIA - PACIFIC OIL ENGINE CO., SAN FRANCISCO, CAL.

U. S. A. Licensees

NEW YORK SHIPBUILDING CORPORATION, CAMDEN, N. J.

NEWPORT NEWS SHIPBUILDING & DRY DOCK CO., NEWPORT NEWS, VA.

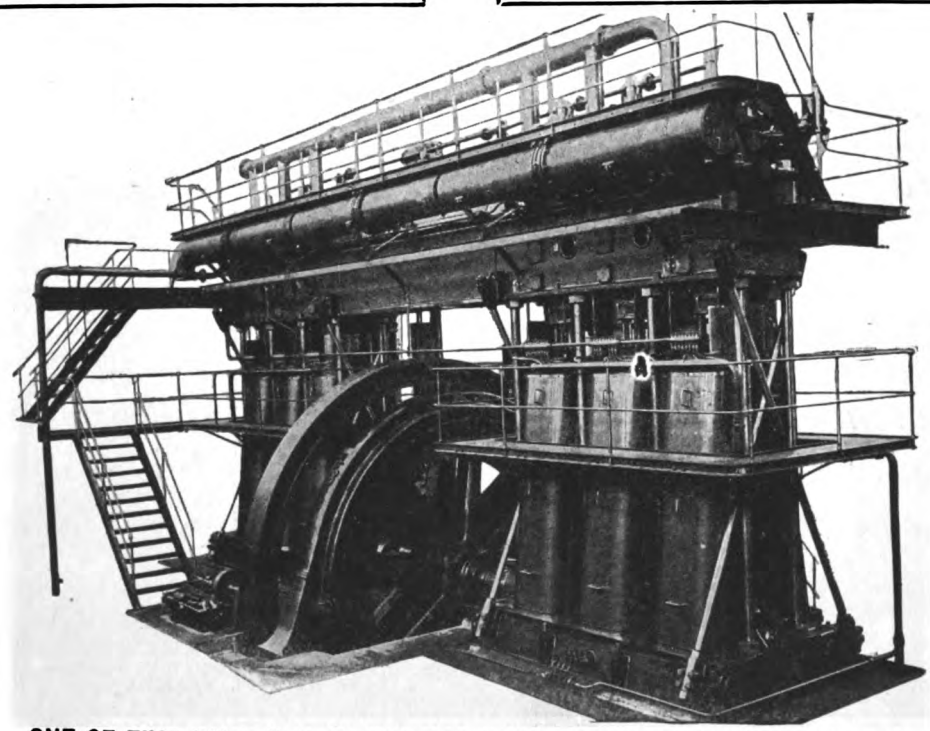
THE WERKSPOOR FOUR-CYCLE TYPE DIESEL MARINE

Werkspoor Have Built or Are Building

48 Diesel **Marine**	Engines =	36,800 b. h. p.
76 Diesel **Auxiliary**	Engines =	2,605 b. h. p.
261 Diesel **Stationary**	Engines =	32,816 b. h. p.
Total, **385** Diesel-type	Engines =	**72,221 b. h. p.**

No Further Marine Licenses Are Available
Four Stationary Constructional Licenses Can Now Be Obtained

ACCESSIBILITY



RELIABILITY

ONE OF FIVE 1500 I. H. P. WERKSPOOR DIESEL ELECTRIC GENERATING SETS

Builders of the FIRST full-powered ocean-going DIESEL Motorship

DIESEL MARINE TYPE ENGINES

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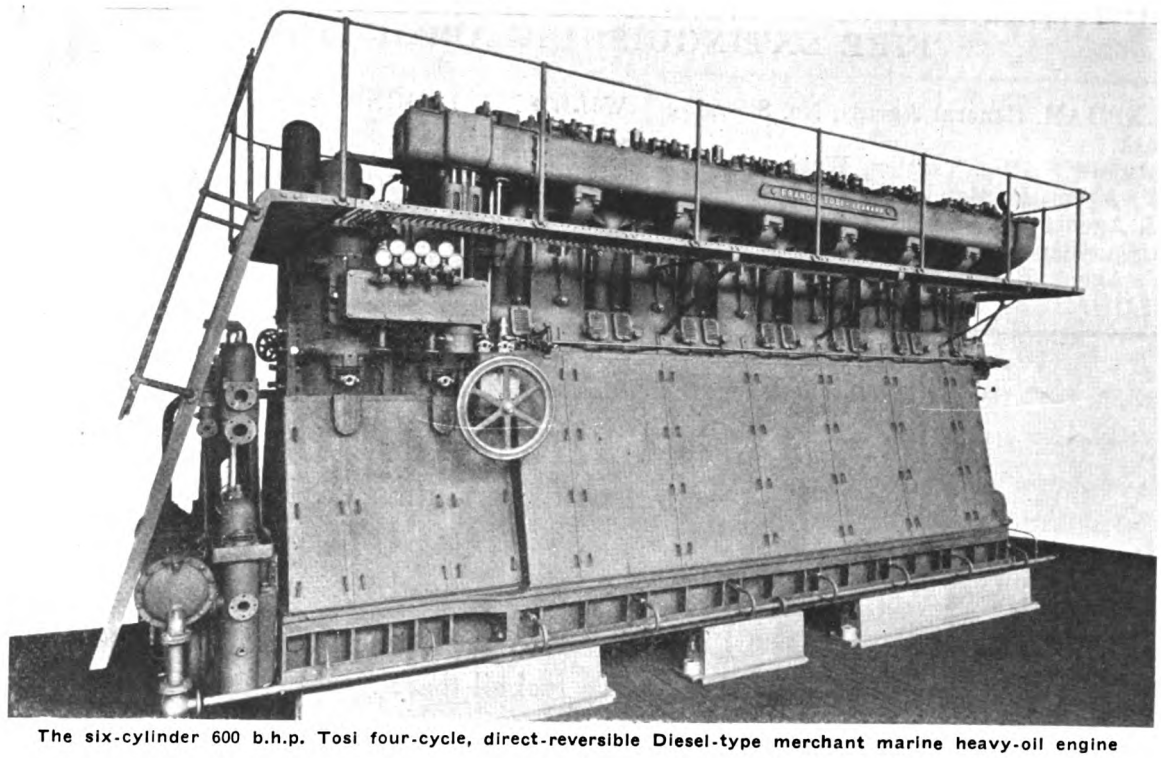
FRANCO TOSI
HEAVY
· OIL ENGINES ·

DIESEL ENGINES FOR DECK AND ENGINE-ROOM AUXILIARY PLANTS ON MERCANTILE AND NAVAL SHIPS.

AUXILIARY PROPELLING MACHINERY FOR SAILING-VESSELS.



The six-cylinder 600 b.h.p. Tosi four-cycle, direct-reversible Diesel-type merchant marine heavy-oil engine

FOUR AND TWO CYCLE CROSS-HEAD MARINE DIESEL ENGINES OF THE HEAVY-DUTY MERCHANT MARINE TYPE.

HIGH-SPEED DIESEL ENGINES FOR FAST NAVAL SURFACE-CRAFTS, AND SUBMARINES.

MORE THAN 100,000 B. H. P. IN USE ON 1200 CYLINDERS UP TO 400 B. H. P. PER CYLINDER.

LEGNANO, ITALY.

NEW YORK OFFICE 82 WALL STREET

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AMERICAN-HAWAIIAN STEAMSHIP CO.

(BONDED LINE)

THE PANAMA CANAL LINE

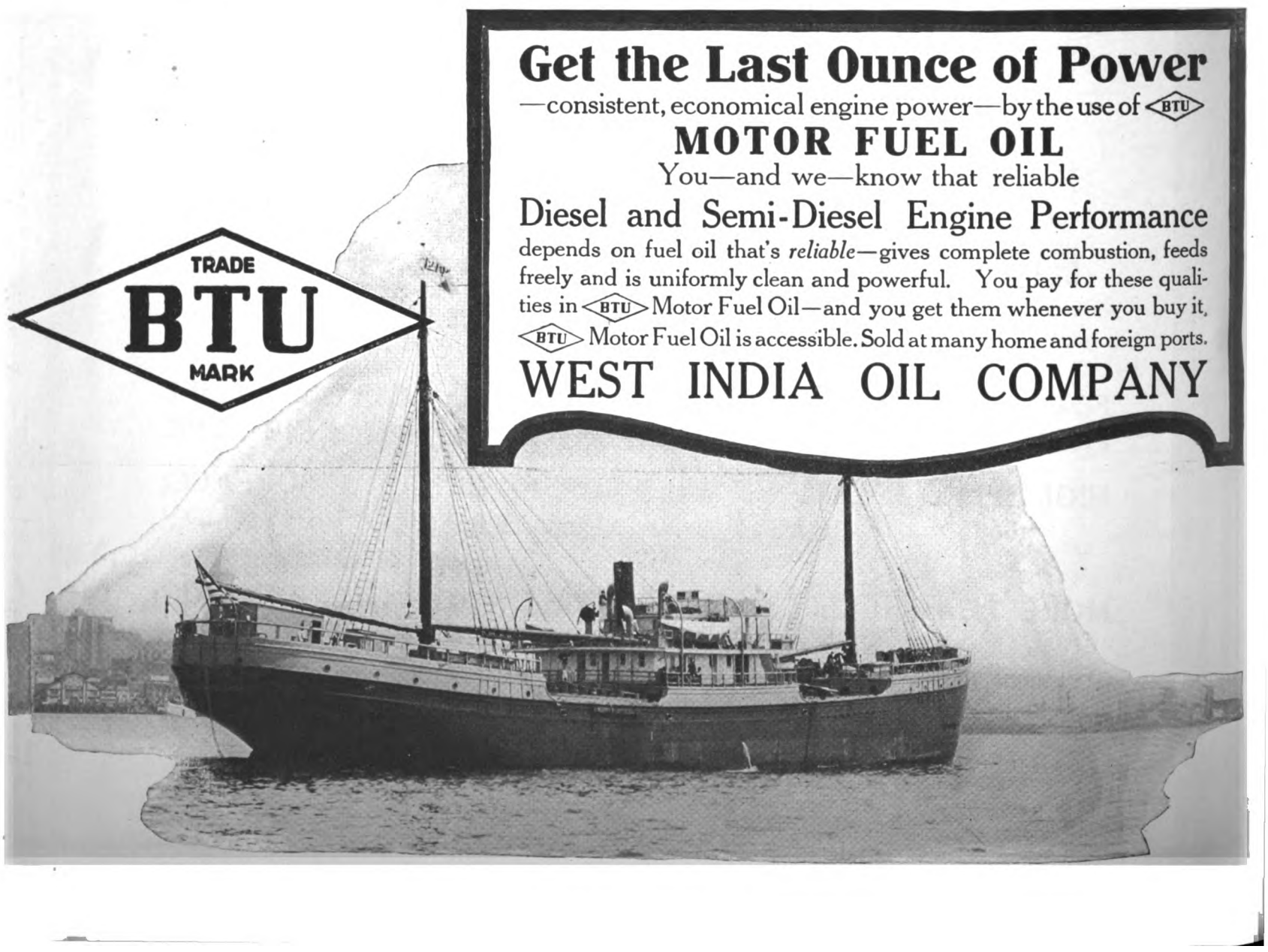
ALL SAILINGS BETWEEN U. S. ATLANTIC AND U. S. PACIFIC PORTS CANCELED UNTIL FURTHER NOTICE

OPERATING THE FOLLOWING

S. S. "**ALASKAN**"—12,000 tons, twin screw
S. S. "**AMERICAN**"—8,000 tons
S. S. "**ARIZONAN**"—12,000 tons, twin screw
S. S. "**CALIFORNIAN**"—8,000 tons
S. S. "**DAKOTAN**"—10,000 tons
S. S. "**FLORIDAN**"—10,000 tons
S. S. "**HAWAIIAN**"—8,000 tons
S. S. "**IOWAN**"—10,000 tons
S. S. "**KANSAN**"—12,000 tons, twin screw
S. S. "**KENTUCKIAN**"—10,000 tons
S. S. "**MEXICAN**"—12,000 tons, twin screw
S. S. "**MINNESOTAN**"—10,000 tons
S. S. "**MONTANAN**"—10,000 tons
S. S. "**OHIOAN**"—10,000 tons
S. S. "**OREGONIAN**"—8,000 tons
S. S. "**PANAMAN**"—10,000 tons
S. S. "**PENNSYLVANIAN**"—10,000 tons
S. S. "**TEXAN**"—12,000 tons, twin screw
S. S. "**VIRGINIAN**"—12,000 tons, twin screw

ALL OF THE COMPANY'S STEAMSHIPS ARE FITTED WITH THE GRIMM FIRE EXTINGUISHING APPARATUS

DEARBORN & LAPHAM, General Agents, No. 8 Bridge Street, New York.
C. K. MAGILL, Agent, Seattle, Tacoma, Wash.
C. D. KENNEDY, Agent, Portland, Oregon.
H. W. ROBERTS, Agent, Los Angeles, Cal.
T. L. BURKE, Agent, San Diego, Cal.
SAMUEL PRAY, Agent, Boston, Mass.
WILLIAMS, DIMOND & COMPANY, General Agents for the Pacific Coast, No. 310 Sansome St., San Francisco, Cal.
H. HACKFELD & CO., Ltd., Agents, Honolulu, T. H.
THEO H. DAVIES & CO., Ltd., Agents, Hilo, T. H.
ALEXANDER & BALDWIN, Ltd., Agents, Kahului, T. H.
W. F. HAGAR & CO., Agents, Philadelphia, Pa.
STREET BROS., Agents, Charleston, S. C.



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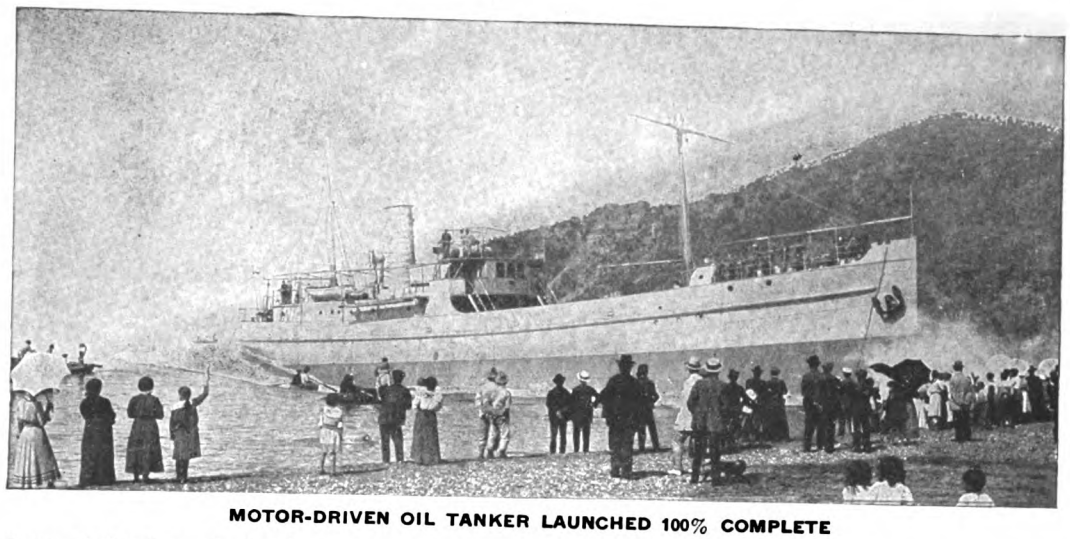

MOTOR-DRIVEN OIL TANKER LAUNCHED 100% COMPLETE

Photo. Societa Escercizio Bacini

Hudson Launching Greases

enable shipbuilders to complete their effort by a successful launching.

HUDSON LAUNCHING GREASES are as essential to the launching ways, as are the ways to the vessel.

LUBRICATION COSTS are not an expense. Rather do they make for economy and efficiency and should be carefully studied.

OUR FACILITIES enable us to provide prompt delivery of all requirements.

INFORMATION will be furnished on request as to best means of preparing ways and essential lubricants for launchings.

Lubrication An Important Factor

Internal-combustion-engines, marine-engines, and machinery must of necessity be well lubricated to obtain efficiency and economy in operation.

Hudson Marine Oils and Hudson Lubricants Meet These Demands

HUDSON OILS AND GREASES once used, are always used.

Write us your requirements

HUDSON OIL COMPANY, Inc.

Marine Department, 109 Broad St., New York City

Cable Address "HUDOIL" **Telephone Broad 4315-6 or Broad 5215**

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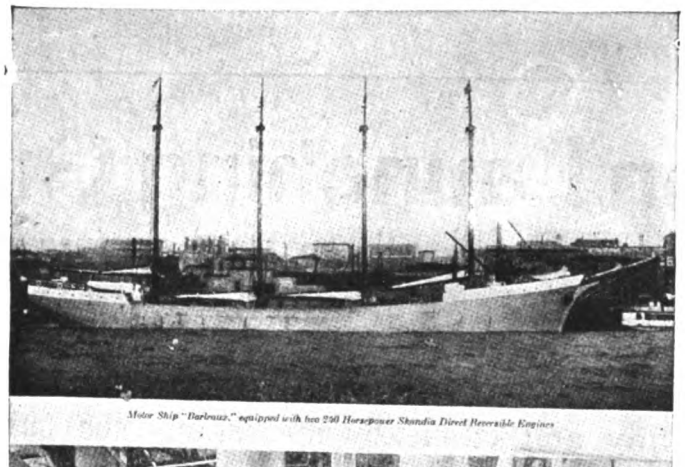
SKANDIA PACIFIC OIL ENGINE COMPANY

SKANDIA OIL ENGINES

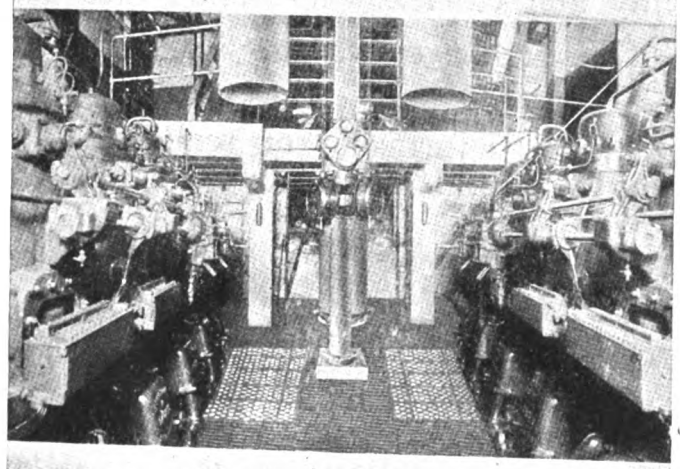
Make Compact Installations

(Marine and Stationary)

Operate on Low Gravity, Crude or Fuel Oils



Motor Ship "Barbara," equipped with two 250 Horsepower Skandia Direct Reversible Engines



Interior Engine Room Motor Ship "Barbara"

550,000 B.H.P. Now in Use and on Order

5 B.H.P. to 500 B.H.P.

5 B.H.P. to 500 B.H.P.

SKANDIA PACIFIC OIL ENGINE COMPANY

WORKS: OAKLAND, CALIFORNIA, U. S. A.

Northwestern Agents SKANDIA ENGINEERING CO.
101 Grand Trunk Dock, Seattle, Wash.

Eastern Agents H. S. JOHANNSEN
50 Church St. New York, N. Y

SKANDIA MARINE OIL ENGINES

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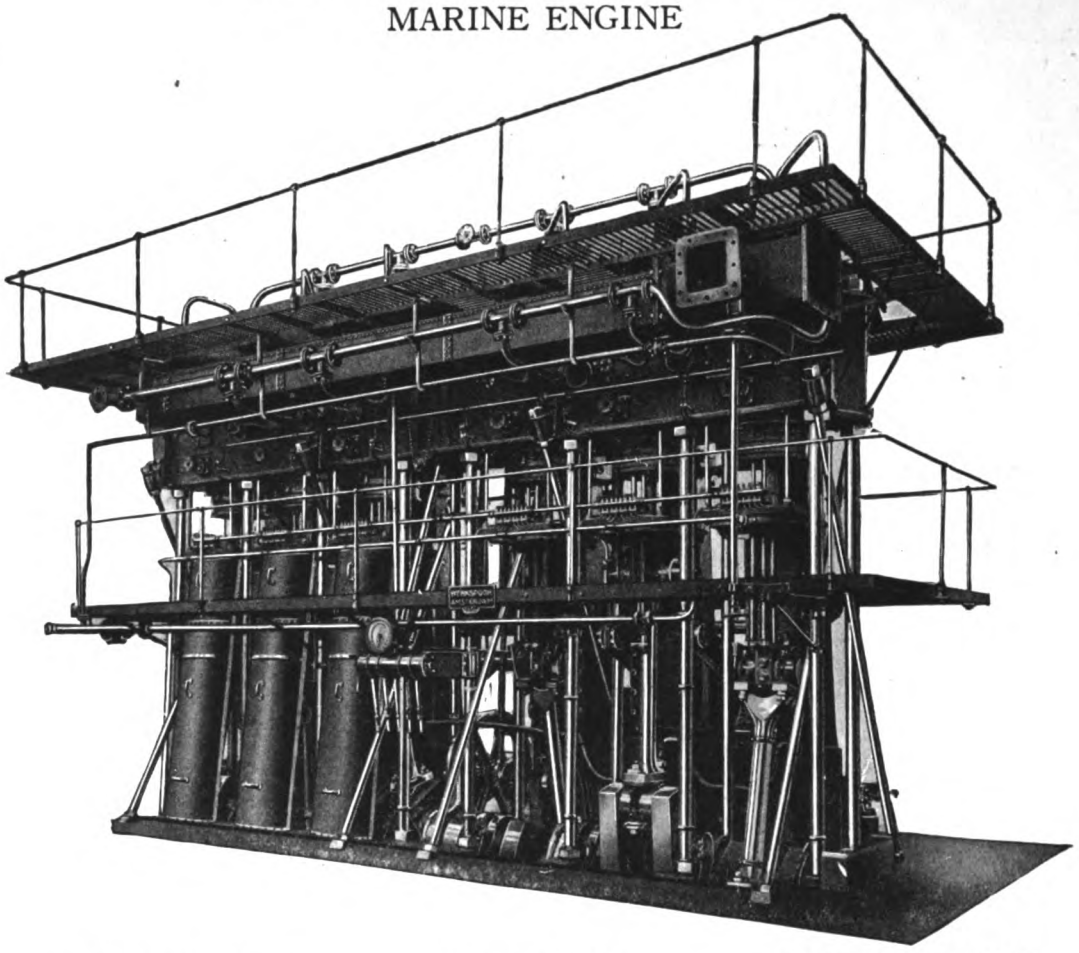
SKANDIA PACIFIC OIL ENGINE COMPANY

BUILDERS UNDER LICENSE OF THE

WERKSPOOR-DIESEL

MARINE ENGINE



RELIABILITY ECONOMY ACCESSIBILITY

Northwestern Agents
SKANDIA
ENGINEERING CO.
101 Grand Trunk Dock
Seattle, Washington

SKANDIA PACIFIC OIL ENGINE CO.
Balboa Building, San Francisco, Cal.
Works: Oakland, Cal.

Eastern Agents
H S. JOHANNSEN
50 Church Street
New York, N. Y.

WERKSPOOR MARINE ENGINES DIESEL

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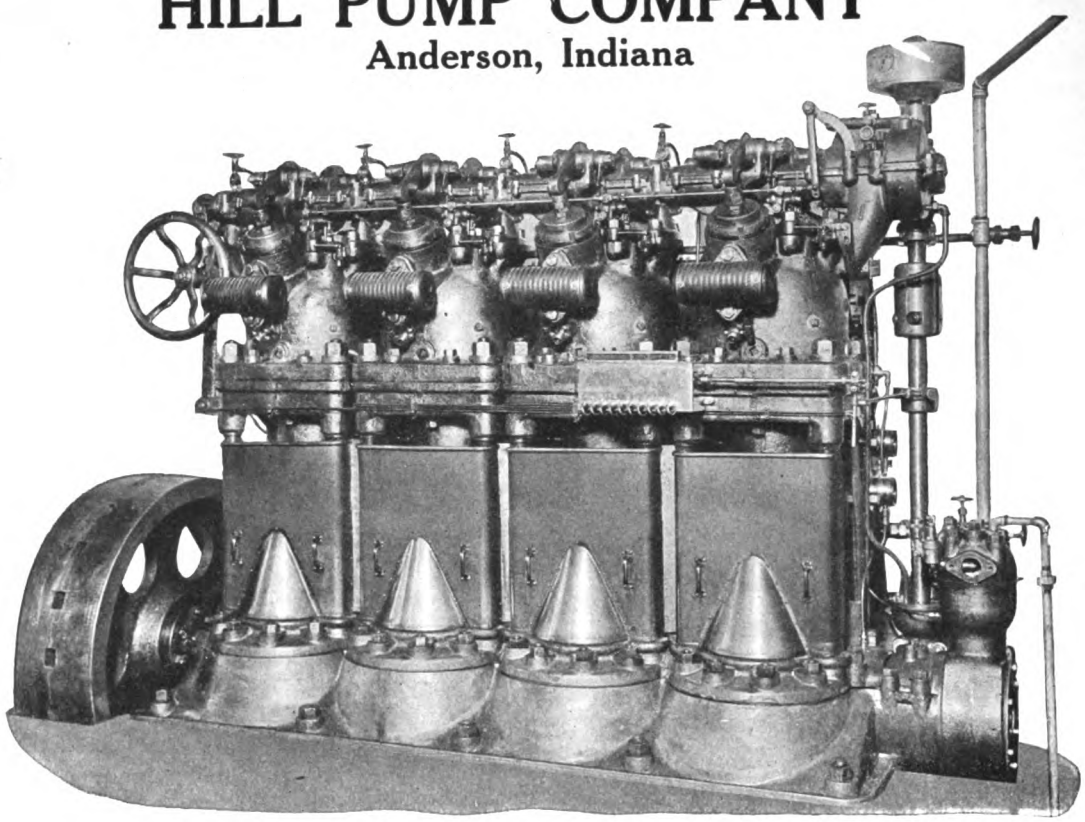
MIDWEST ENGINE COMPANY

SUCCESSORS
TO
LYONS ATLAS COMPANY
Indianapolis, Indiana
AND
HILL PUMP COMPANY
Anderson, Indiana



100 BHP Midwest Heavy-Oil Engine, Type VDV

FOUR-CYCLE
25, 50, 75 and 100 BHP Sizes—1, 2, 3 and 4 Cylinders

Ideal Power for Small Commercial Craft and for Marine Auxiliaries

Ignition Solely by the Heat of Compression, without Air-injection, Magneto, Spark-Plug, Electric-System, Hot-Bulb, Tube, Ball, Plate, or other Heated Metallic Surface

No Carburetor or High Pressure Air Compressor

ALSO BUILDERS OF
MIDWEST and WERK-SPOOR
MARINE DIESEL ENGINES

INDIANAPOLIS, INDIANA, U.S.A.

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Misunderstanding of Signals Between Bridge and Engine Room Eliminated by the Use of Our Safety Attachment to ENGINE or TURBINE Controls

Additional Superior Features:

1.—Frictionless ball and roller bearings.

2.—Requires one-half the usual number of chains, cables, pulleys and brackets.

3.—Automatic and positive centering of operating levers in each signal position.

4.—Free from heavy strains and the consequent breakdowns of signal gear, which always endangers the ship.

You have only to specify "I-C. S." safety engine telegraph to obtain the most modern and efficient equipment.

Ask for Specifications

INTERNAL-COMBUSTION STEAM ENGINE CO.

Patentees and Manufacturers of Improved Marine Power Equipment 21 COLMAN DOCK, SEATTLE, U. S. A.

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Canada	Switzerland	India	Tahiti	Hawaii
Alaska	Mexico	S. Africa	Siberia	Philippine Islands
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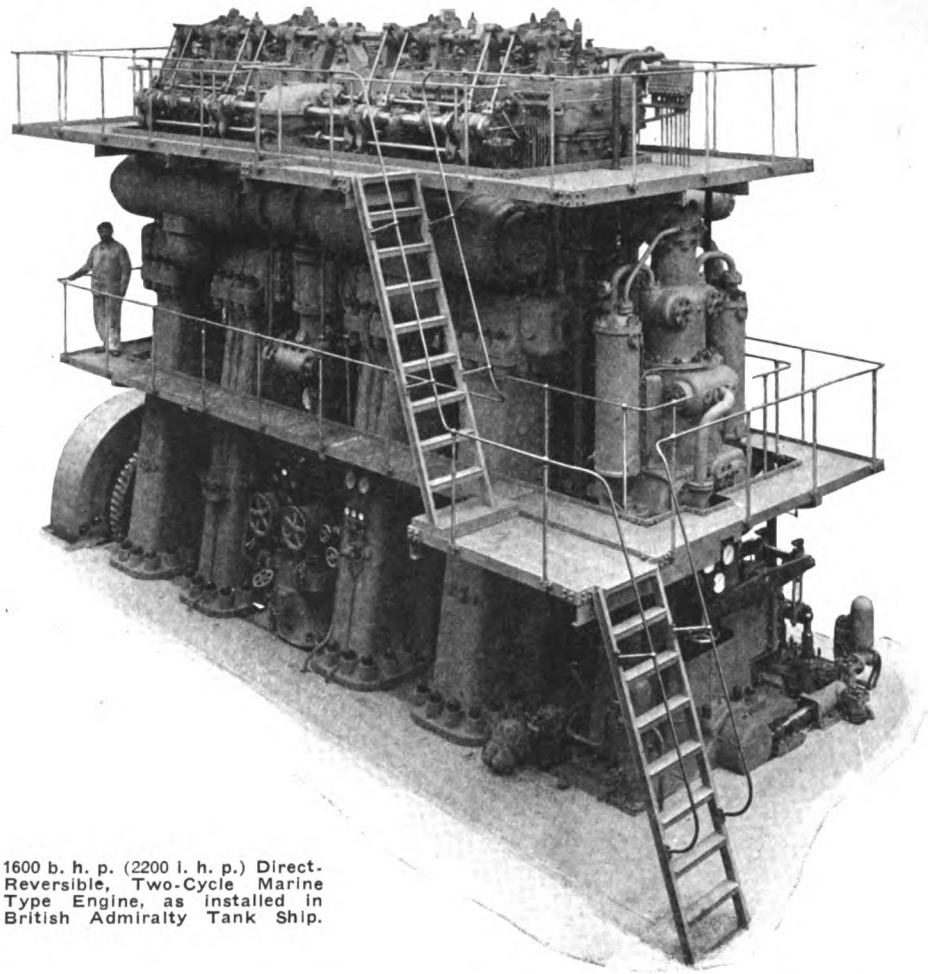
FRÈRES

SULZER TWO-CYCLE DIESEL
MERCHANT MARINE and SUBMARINE ENGINES

STANDARDIZED SIZES:
150 b. h. p. to 4,000 b. h. p. per engine
in four and six-cylinder units

TOTAL OUTPUT OF TWO-CYCLE ENGINES 255,000 B. H. P.



1600 b. h. p. (2200 i. h. p.) Direct-Reversible, Two-Cycle Marine Type Engine, as installed in British Admiralty Tank Ship.

BUSCH-SULZER BROS. DIESEL ENGINE CO.
ST. LOUIS, MO.

Sole Owners of All Rights for Sale and Manufacture of Sulzer Diesel Engines for Installation in the U. S. A. and Its Possessions; Panama and Canada

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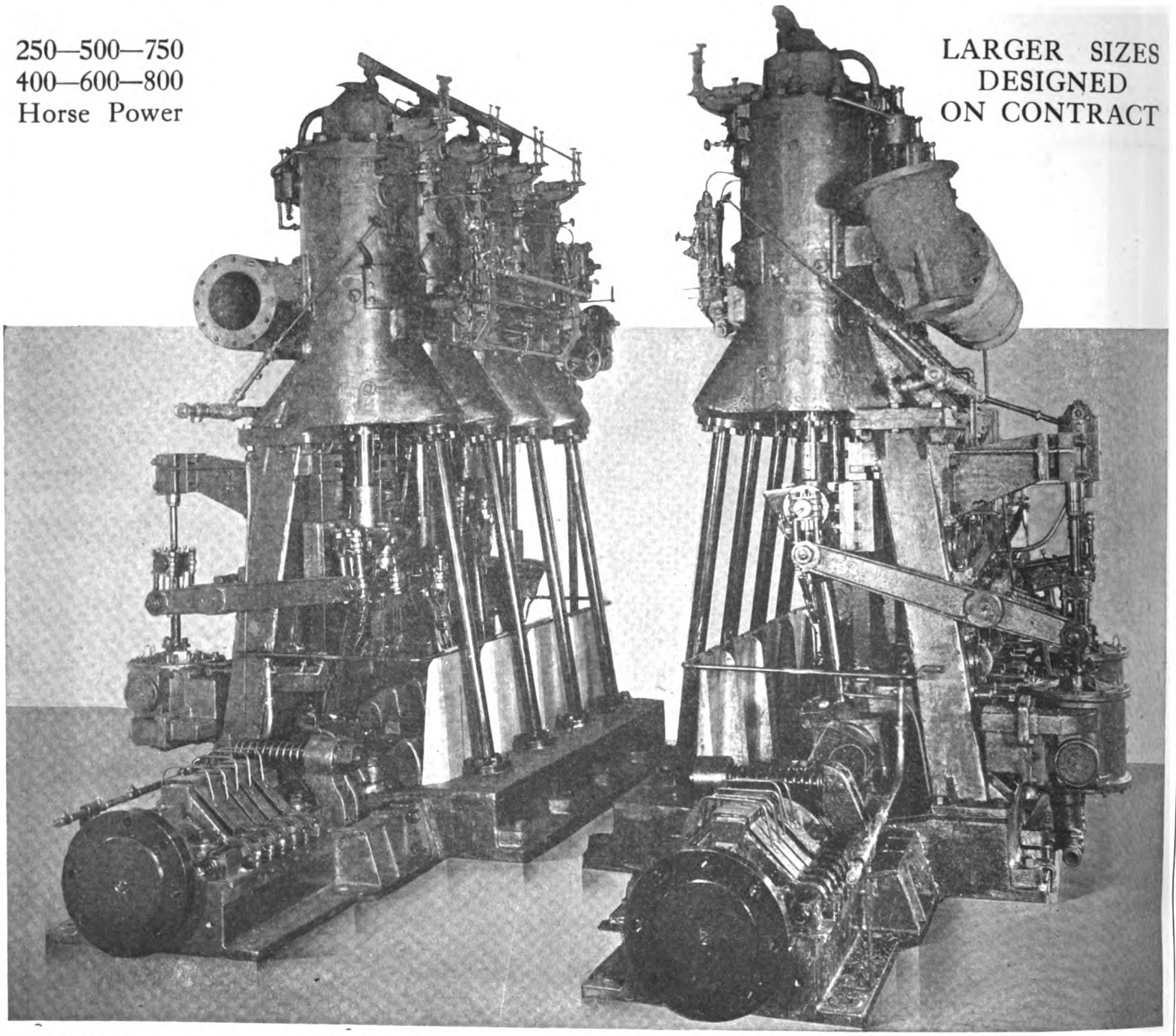
250—500—750
400—600—800
Horse Power

LARGER SIZES
DESIGNED
ON CONTRACT



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EASILY OPERATED

DIRECT REVERSIBLE
4, 6 and 8 CYLINDERS

QUICK DELIVERIES

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L. C. SMITH BUILDING

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Seattle, U.S.A.

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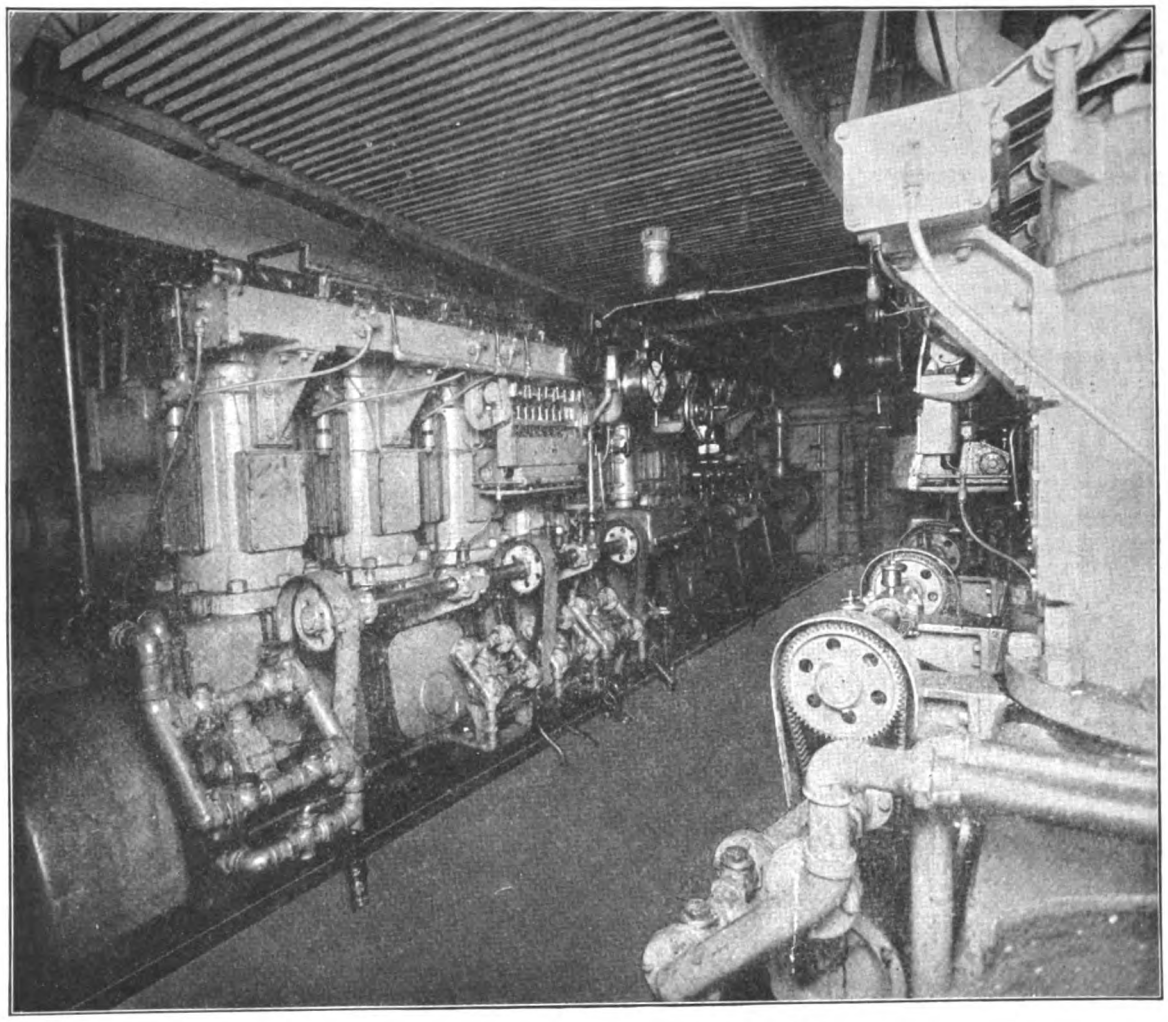
WINTON
HEAVY OIL ENGINES
FULL DIESEL TYPE



Typical Engine Room Installation

The simplicity of Winton Engines and the convenient location of all accessories brings within range of the operator at all times all of the working parts of the engine.

WINTON OIL ENGINES ARE SUCCESSFUL ENGINES AND ARE DAILY DEMONSTRATING THEIR WORTH

Winton Engine Works, Cleveland, Ohio, U.S.A.

Seattle Representative **- - H. W. STARRETT, SUNSET ENGINE COMPANY**

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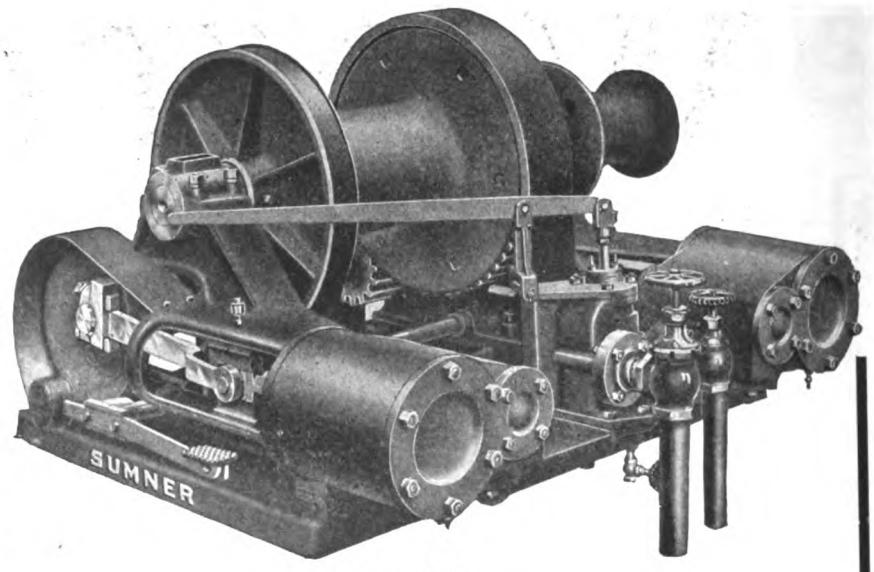
Sumner Hoist

A New Model

Simplicity of construction adaptability to purpose and general reliability are characteristics of the Sumner Hoist.



Model No. H-32

CYLINDERS—8"x10"; steam pipe 2"; exhaust pipe 2½"; self-draining piston valves.

MANIFOLD FOR STEAM AND EXHAUST—Is lowest part of cylinders and valves, thereby draining all condensation from exhaust.

WITH BALANCED THROTTLE VALVE—Securely bolted. Lever in any position desired.

MAIN SHAFT—Forged Steel, 4 3/16 in. in diameter.

EXTENDED BOX—With 13" bearing, supporting main shaft the entire distance between main gear and gypsy head.

Write us for Complete Description with Weights and Prices

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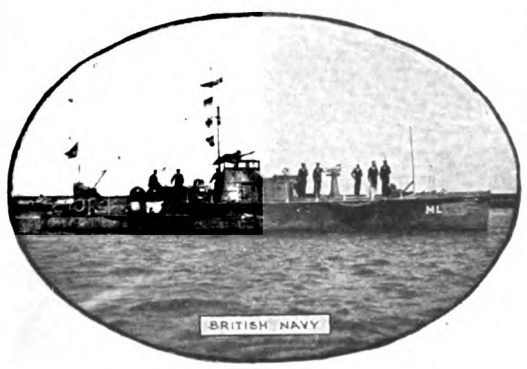

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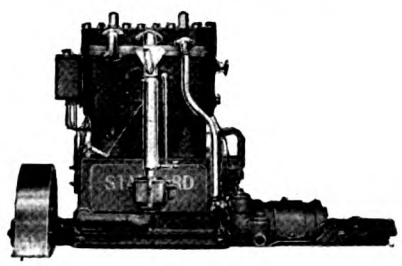
80 Ft. M. L. Two 220 H. P.
Standard Engines

The Service Stripes of War Distinguish Man and Machine

Four stripes now distinguish



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NLSECO HEAVY-OIL ENGINES

ANNOUNCEMENT

Owing to the capacity of our plant being completely occupied with the construction of Marine Diesel engines for the U. S. government, we regret we are unable to make any definite quotations to private interests during the remainder of this year. May we take your carte blanche order for delivery when conditions permit? Such deliveries will be made in strict rotation.

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Groton, Conn., U. S. A.

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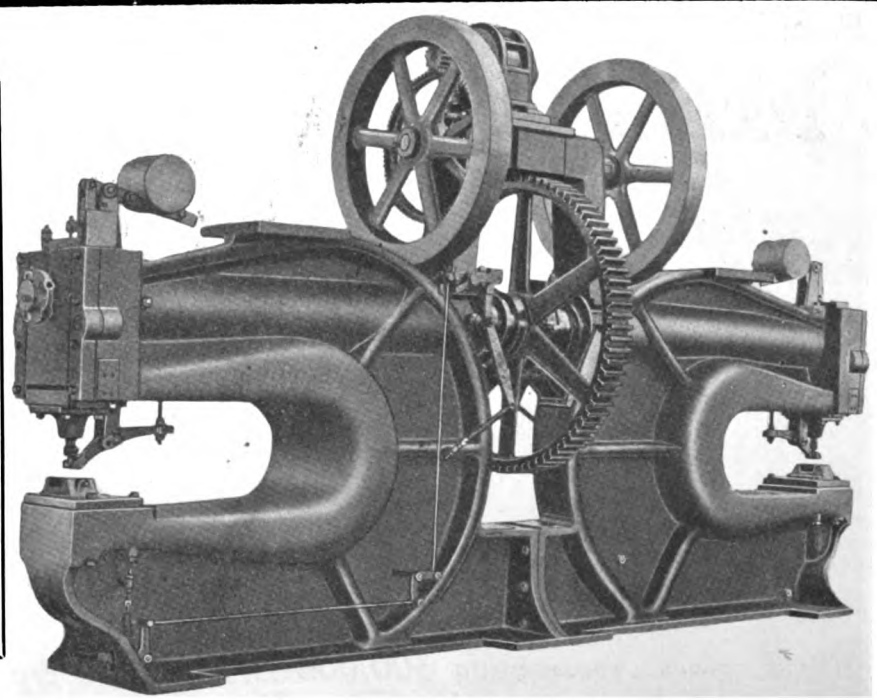
Punching and Shearing Equipment



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NEW YORK CHICAGO PHILADELPHIA BIRMINGHAM

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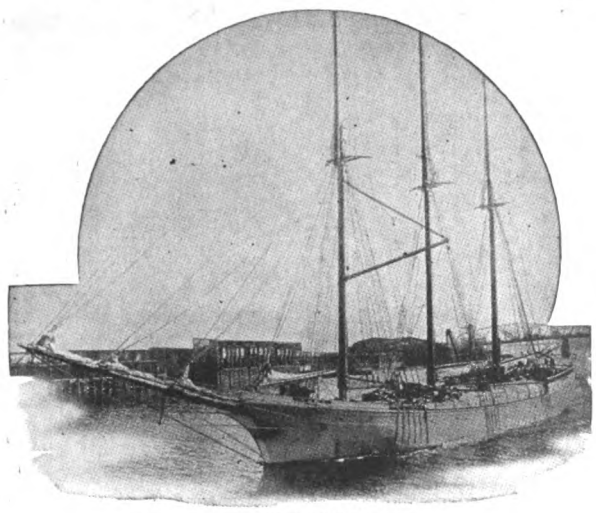
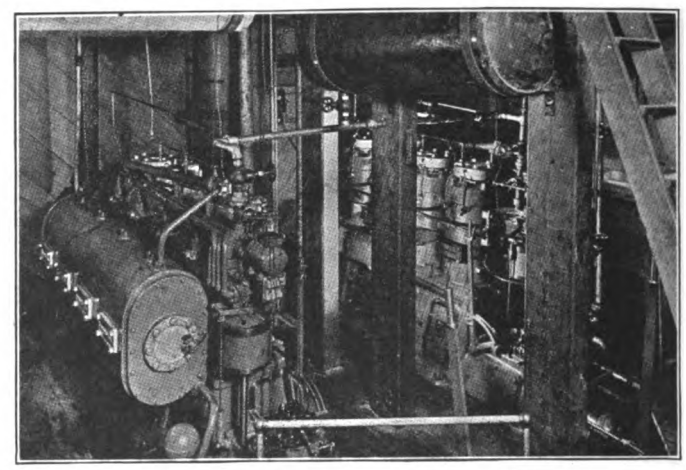
With This Heavy Deckload of Lumber



The "Ruby"

The "Ruby" moves steadily up the channel and glides smoothly into dock—under constant control of her two 100 horse-power

FAIRBANKS-MORSE "C-O" MARINE OIL ENGINES



Two 100 H. P. "C-O" Engines installed in the "Ruby"

"C-O" Engines—30 to 200 H. P.—get unfailing flexible power from low-priced fuel oils

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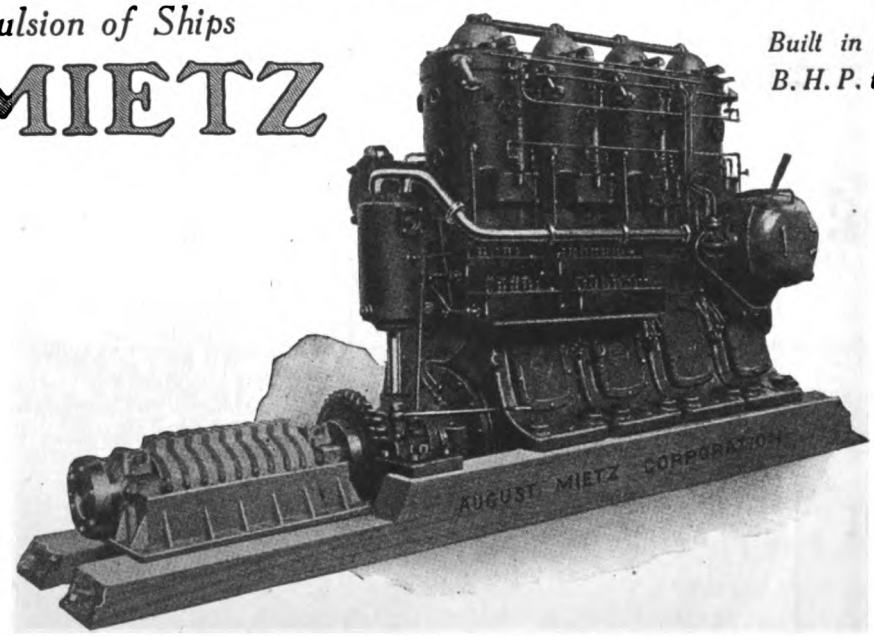
America's Pioneer Marine Oil Engine

For the Propulsion of Ships

THE MIETZ

Built in Sizes from 40 B. H. P. to 350 B. H. P.



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8,200 Engines Aggregating 300,000 B. H. P. in Service
Economical Operation On Low-Priced Fuel-Oils

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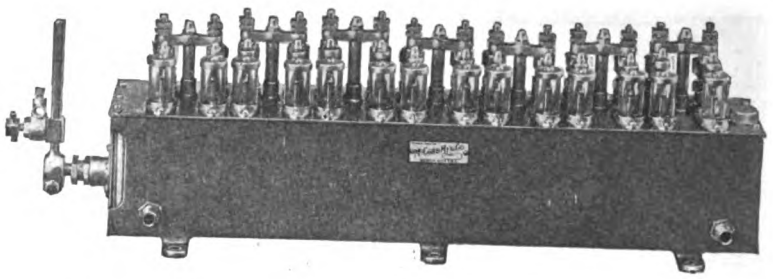

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The McCord delivers the oil in just the right quantity to all points.

The oil is fed through a plain sight feed which may be regulated by a simple finger adjustment on the outside.

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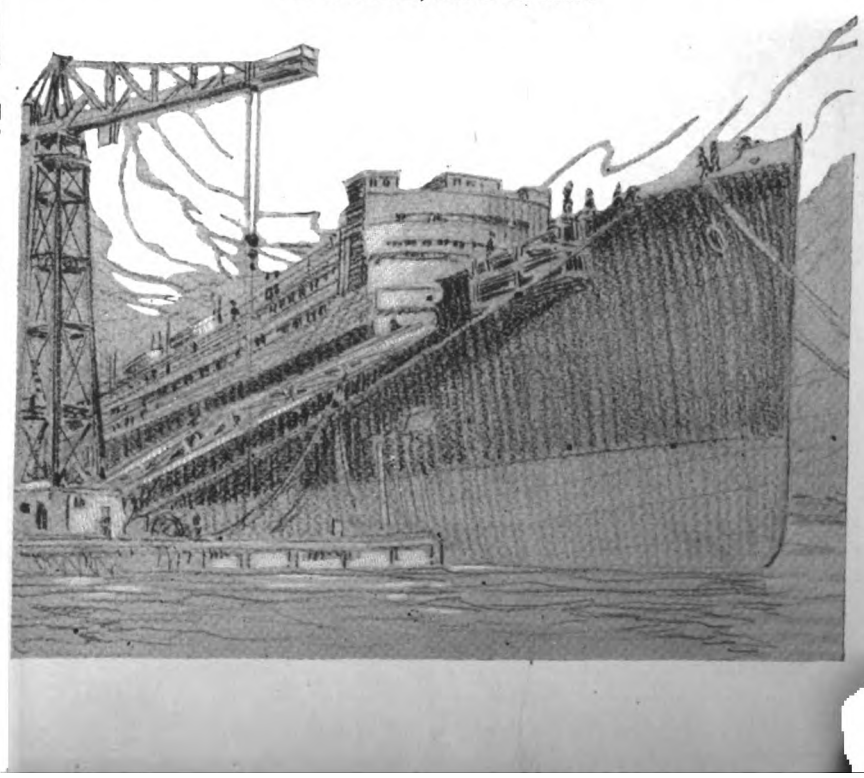

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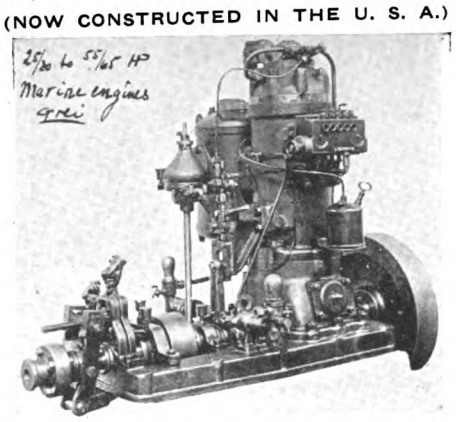

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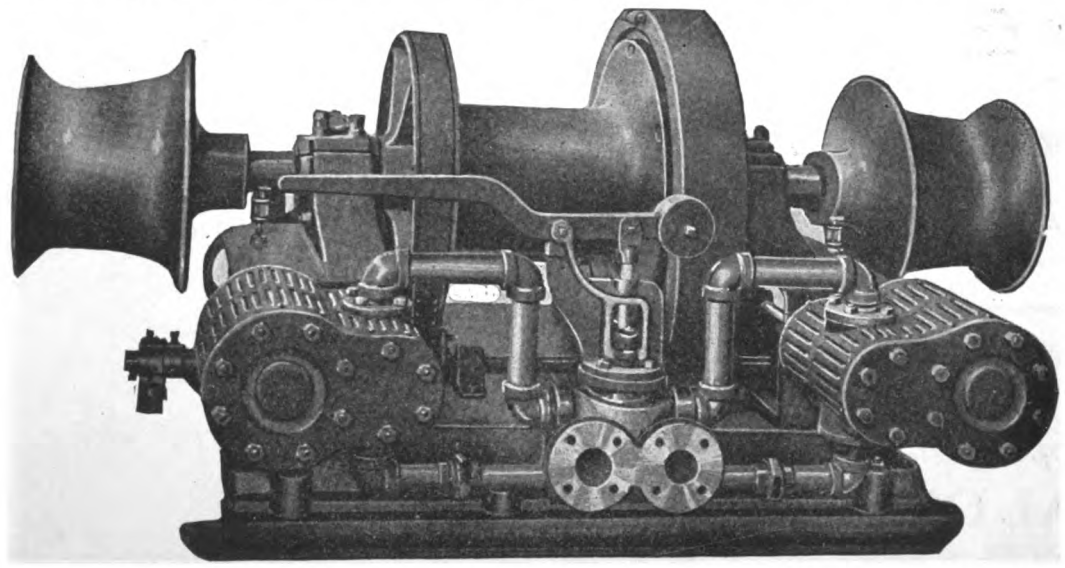
Successors to THE VULCAN IRON WORKS

ENGINEERS AND MANUFACTURERS



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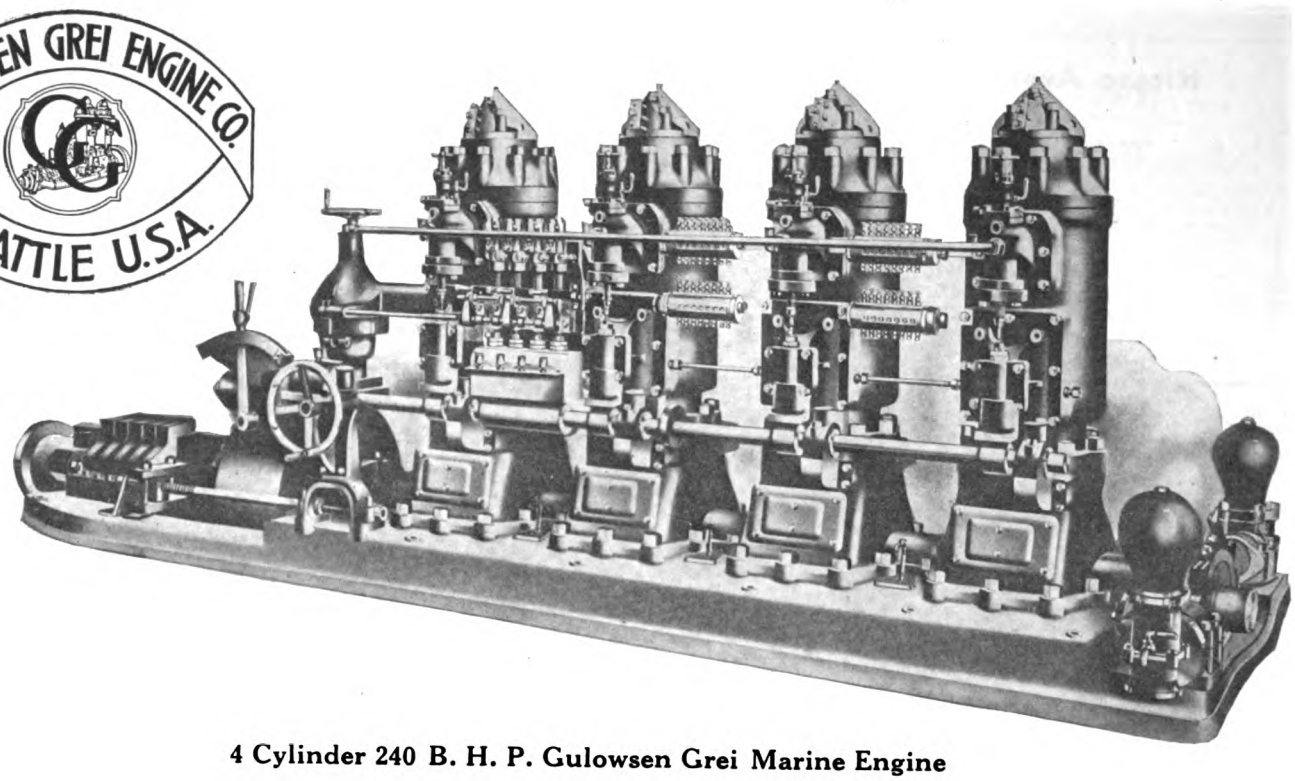
IN SIZES FROM 4 B. H. P. TO 240 B. H. P.

GULOWSEN GREI ENGINE CO. SEATTLE U.S.A.



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The Gulowsen Grei Heavy Oil Motor has for years been the standard of the Norwegian fishing fleet. ¶Maintaining simplicity of design and low fuel consumption ¶It is efficient and trustworthy. ¶Suitable for all types and sizes of workboats. ¶Engines of 4 to 100 B. H. P. for immediate delivery in Seattle or New York.

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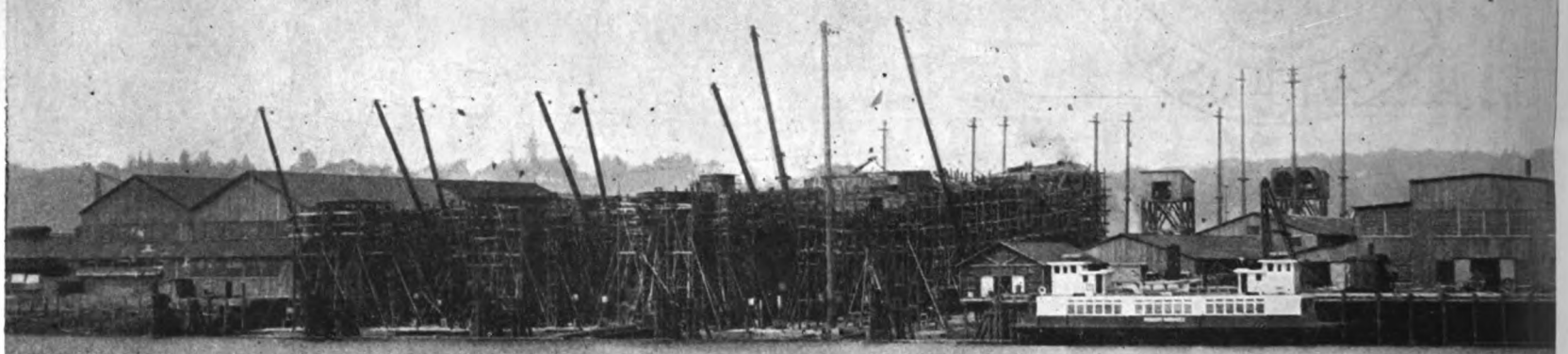
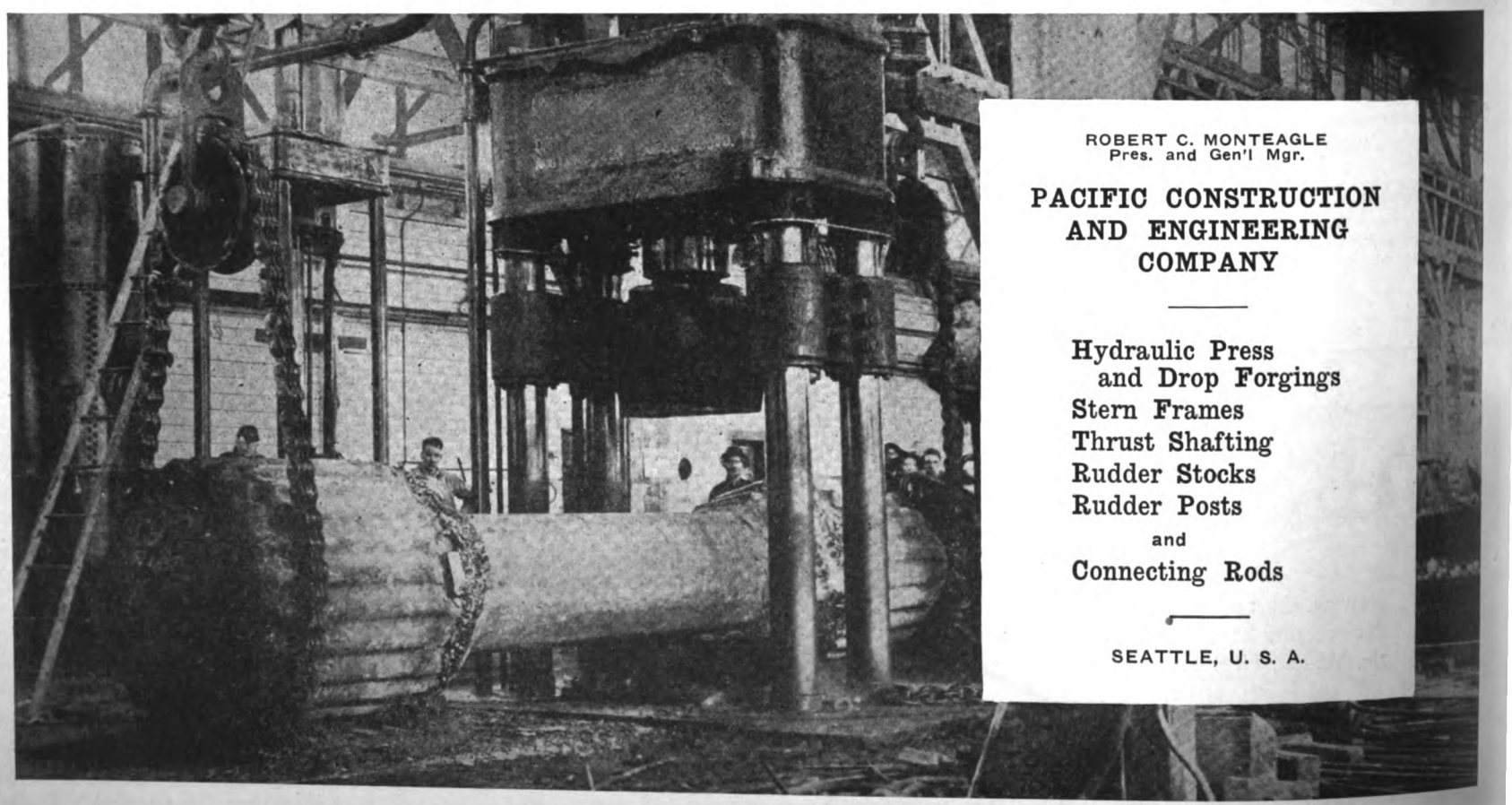


General view of Duthie Plant, Seattle



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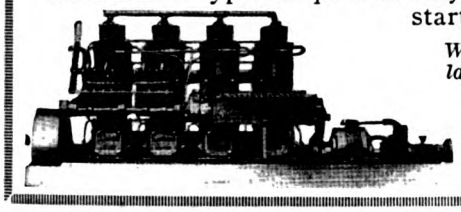

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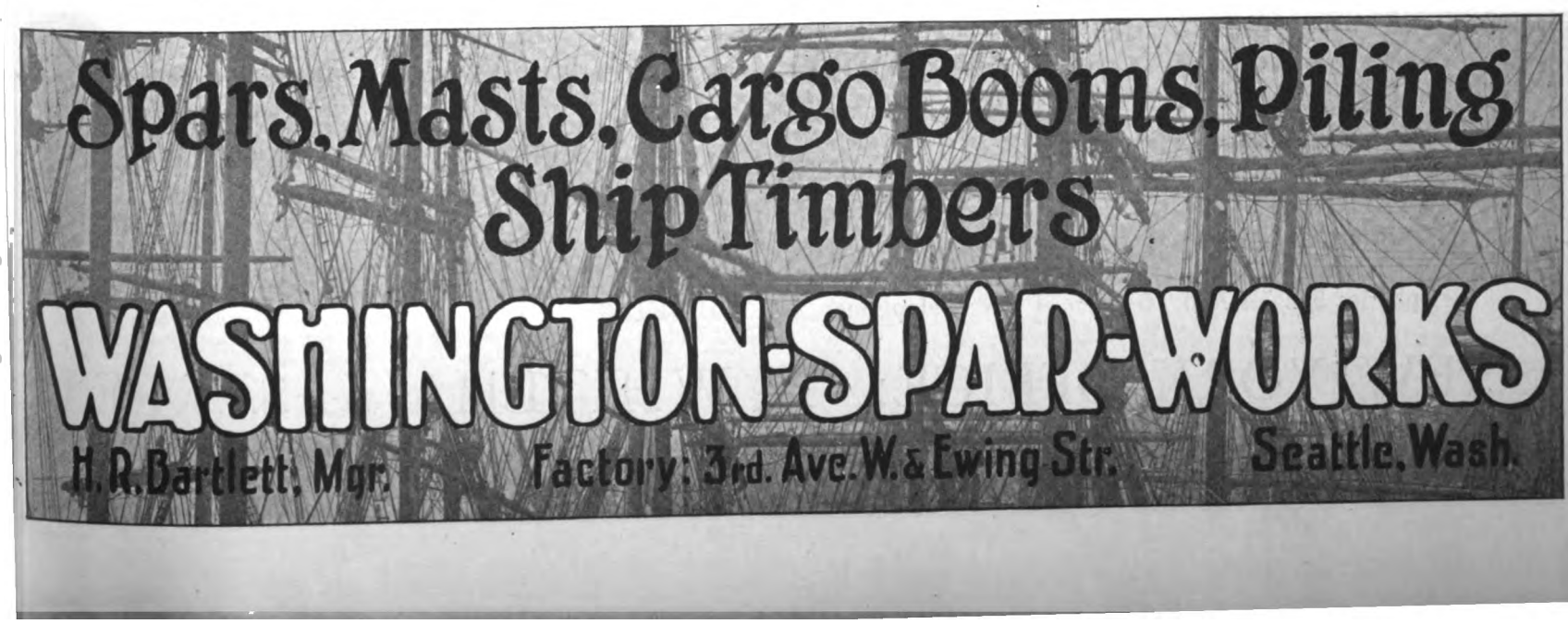

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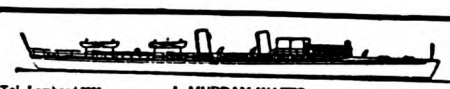

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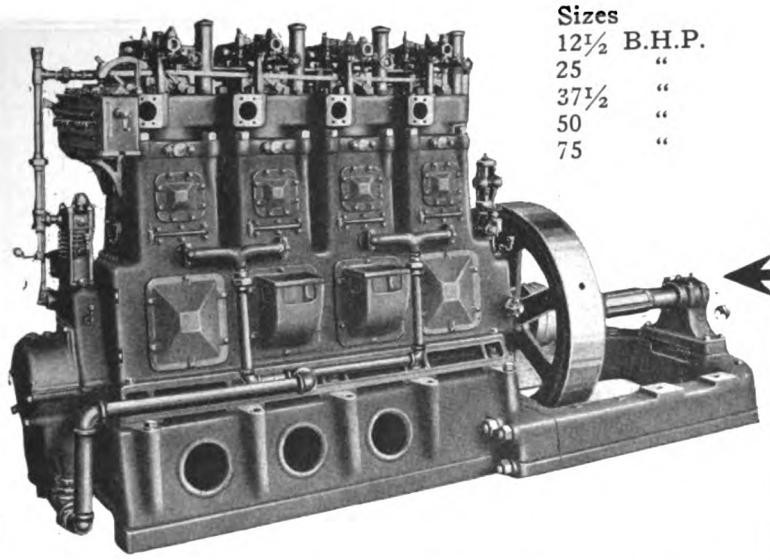

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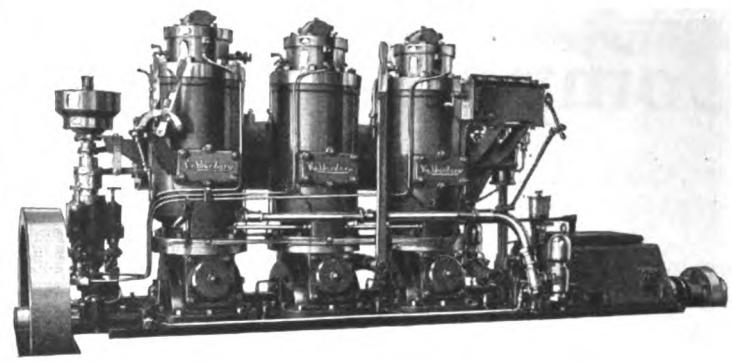

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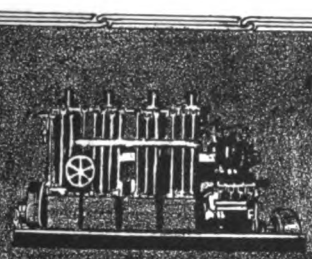

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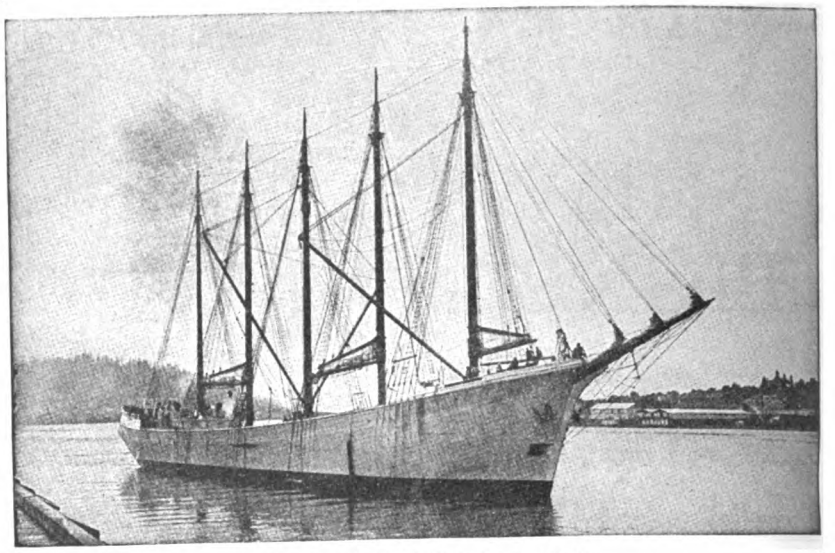

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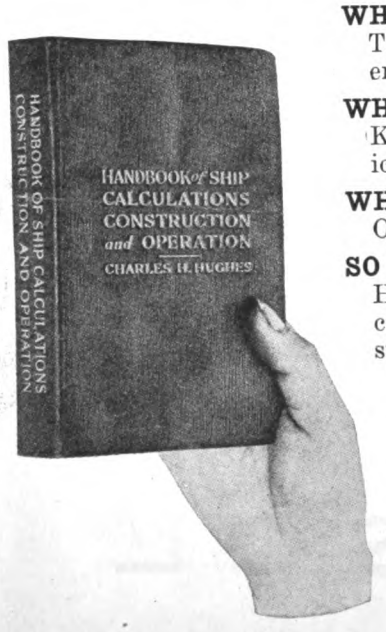

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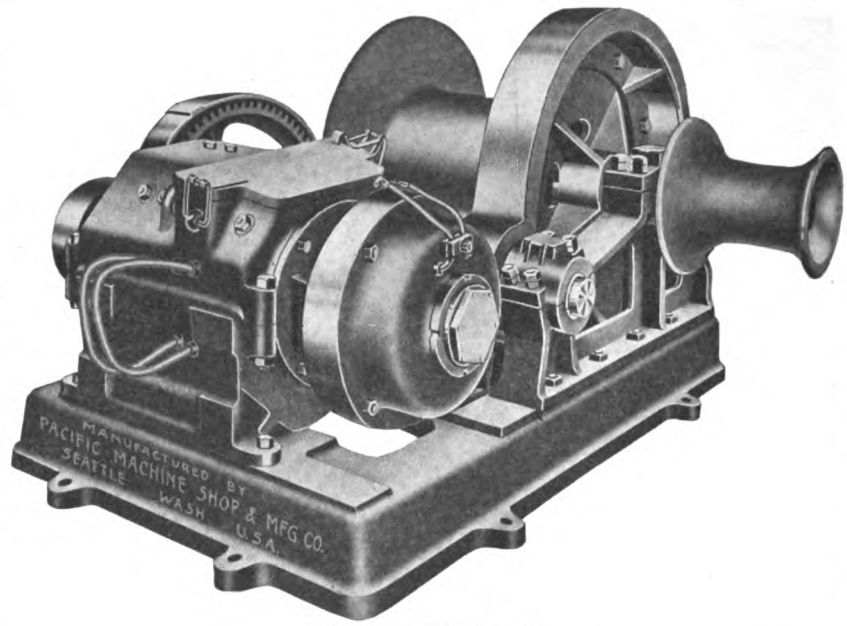

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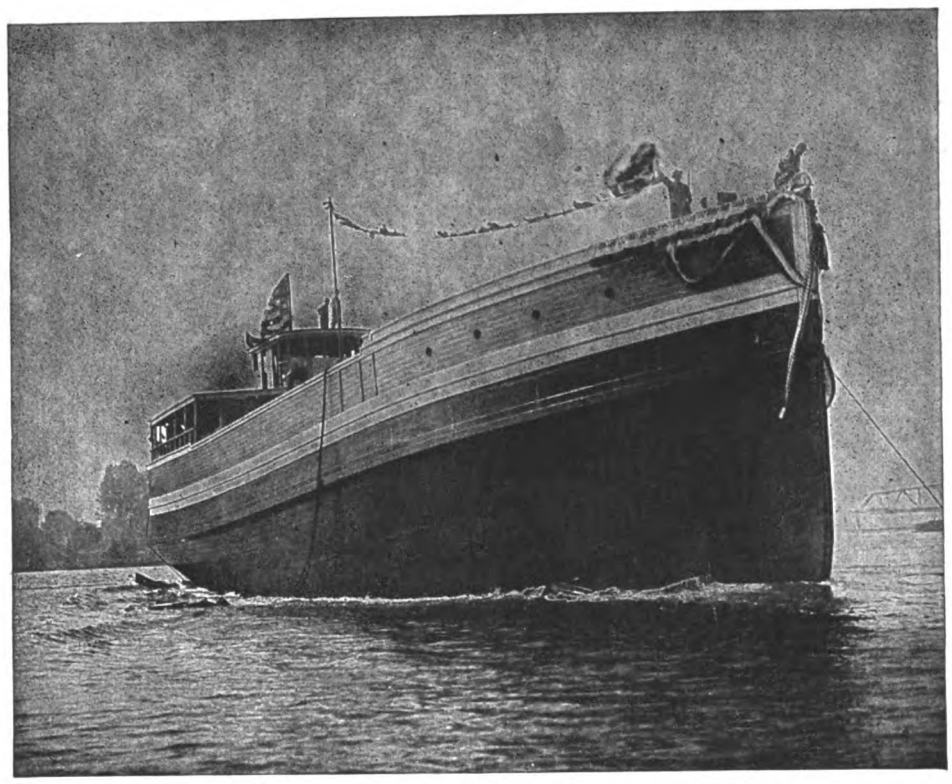

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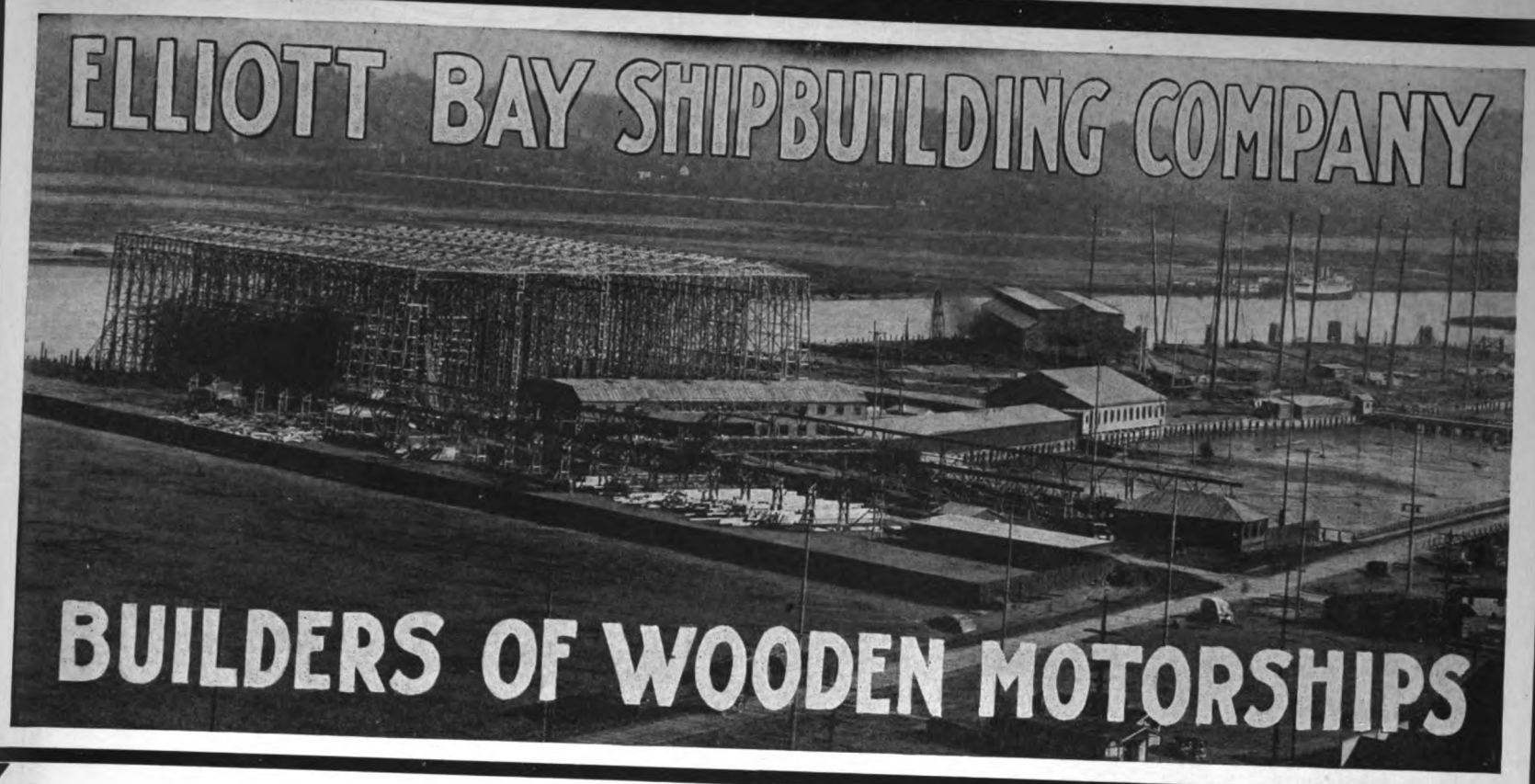

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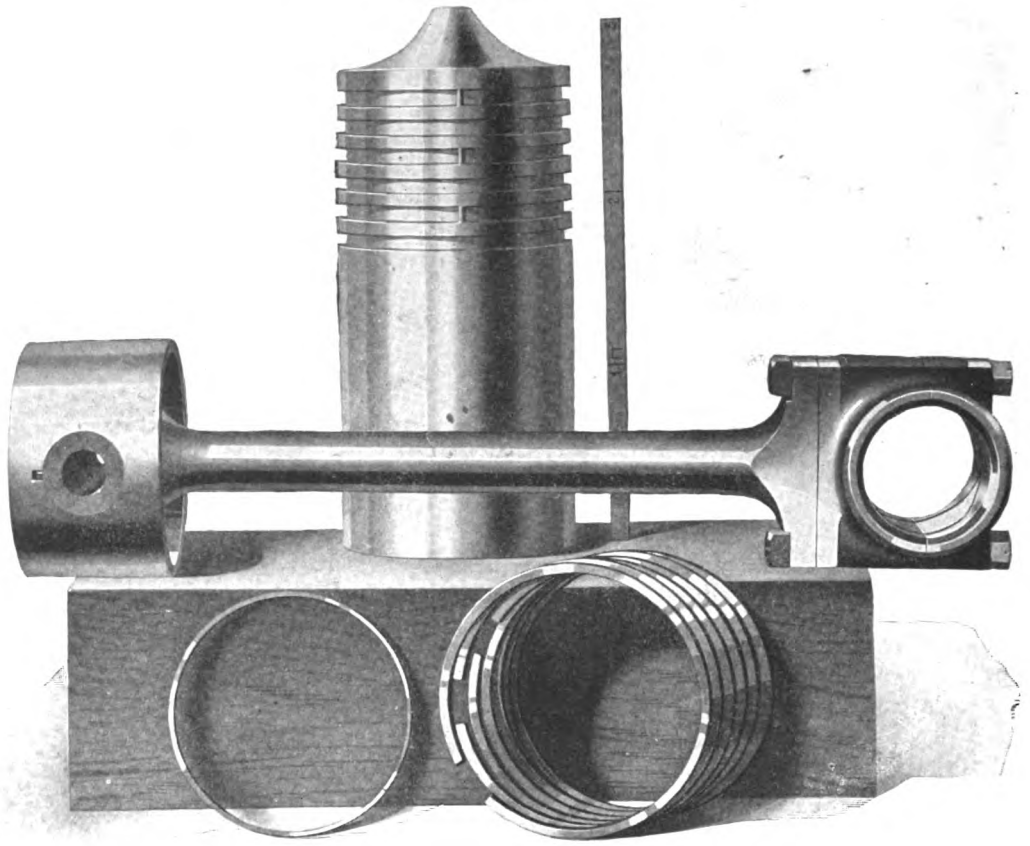

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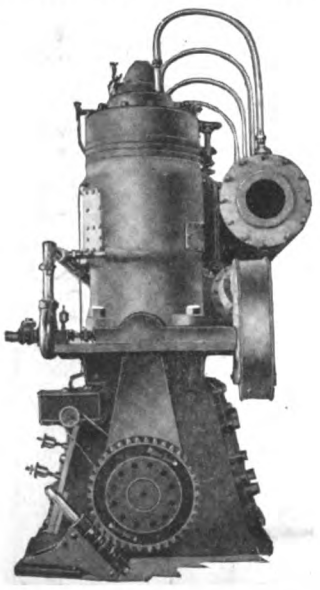

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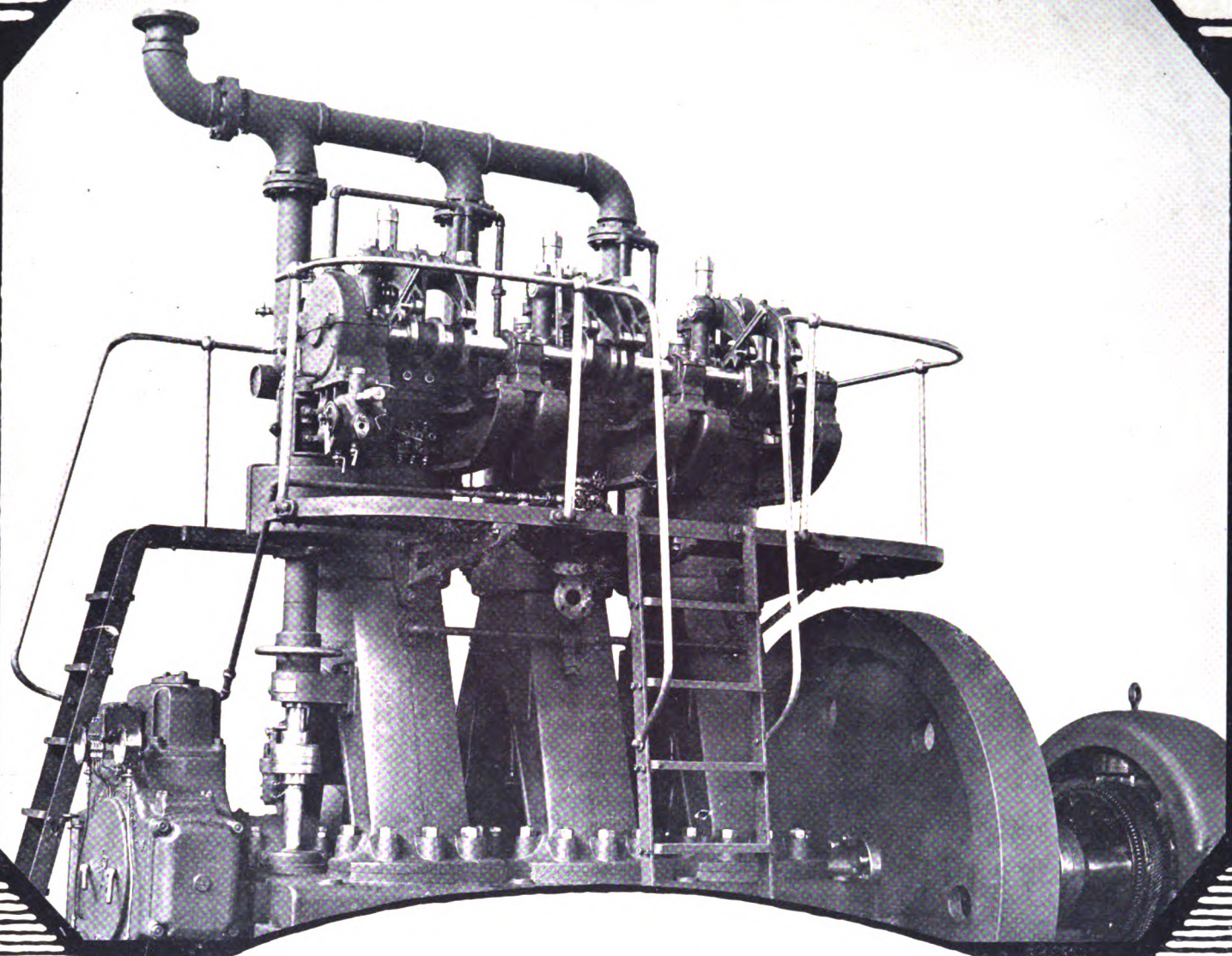

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FOR DIESEL and SEMI-DIESEL ENGINES

For the correct lubrication of internal-combustion engines—Hot Ball Ignition, Surface Ignition, Semi-Diesel, or Diesel type—use

CALOL DIESEL ENGINE OIL OR CALOL DIESEL ENGINE OIL HEAVY

These are quick-acting oils of correct body, giving the necessary Piston seal (compression) and proper bearing lubrication both vital points in economical operation. And these oils reduce friction and wear to a minimum.

Our lubricating engineers are at your service. At points named below and at our other many conveniently located water-front supply stations we can furnish you with CALOL brands of lubricating oils and other Standard products. Send for complete list of water-front stations.

CORRECT FUEL FOR THE DIESEL ENGINE

The economy in operation of the Diesel engine lies in its ability to utilize the heavier forms of Fuel Oil. Fuel Oil for Diesel and Semi-Diesel engines must be specially prepared in order that it shall have the qualities necessary to give economy and service.

CALOL FUEL OIL
FOR DIESEL and SEMI-DIESEL ENGINES

Calol Fuel Oil is economical because all its power can be fully utilized by the engine due to complete combustion. It is safe, easily pumped, and uniform in quality.

Send for Bulletin No. 7, "Calol Fuel Oil for Oil Injection Engines." It is a comprehensive statement of the required properties of an oil as a fuel for Oil Injection Engines.

Calol Fuel Oil can be furnished through pipe lines at the water-front at:

RICHMOND, CALIF.
SEATTLE, WASH.
PORTLAND (WILLBRIDGE), ORE.
HONOLULU, T. H.

By barge at:
SEATTLE, WASH.
SAN FRANCISCO, CALIF.

STANDARD OIL COMPANY
(California)

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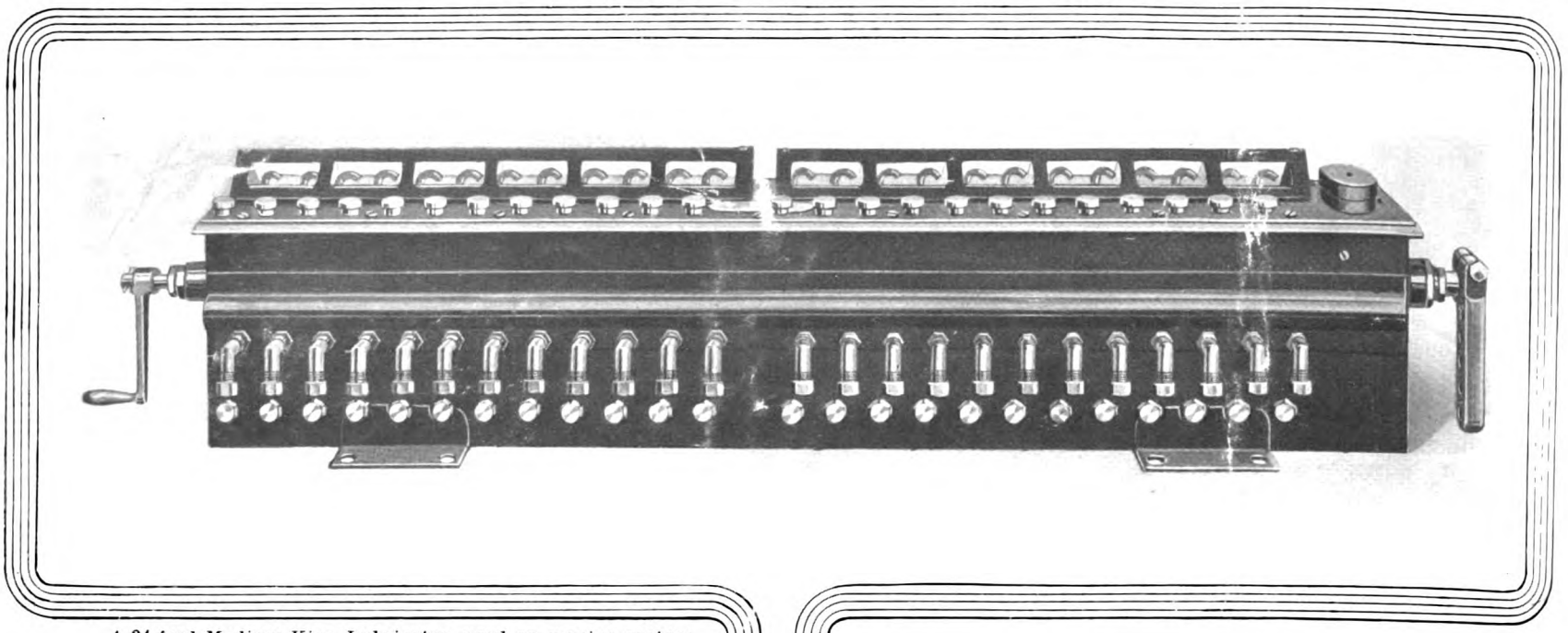

A 24-feed Madison-Kipp Lubricator, used on marine motors

Their Entire Mechanism Works In Oil

A MAJOR reason leading more and more marine motor manufacturers to adopt Madison-Kipp Lubricators is their straight and clean design.

No parts protrude from the cover: therefore the entire lubricator is free from the dangers and annoyances due to accumulating dust and dirt.

The plungers and the entire operating mechanism are immersed in oil, assuring unfailing operation.

Freedom from sticking and clogging is made absolute by the Kipp valveless principle.

By this principle, intake is timed and delivery regulated by means of registering ports in the hollow-plunger sleeve and barrel.

Their feed adjustments are consequently positive, being made solely by controlling the amount of oil measured out; so that the plungers always make the complete strokes necessary to accuracy and faithfulness.

With the Madison-Kipp you are therefore protected against failures and inaccuracies inseparable from feed adjustments made by regulated plunger strokes, for when such strokes are limited closely reliability becomes questionable and even impossible.

These and other superiorities of Madison-Kipp Lubricators are winning more and more marine-motor makers to them.

They are also in general use on steam hammers, dredges, compressors, and on two-thirds of all farm tractors now in use.

We can make prompt deliveries, for our factory is the largest of any devoted to lubricator manufacture.

Write for our catalogs.

The Madison-Kipp Lubricator Co.
Madison, Wisconsin

Madison-Kipp Lubricators

VALVELESS **FORCE-FEED**

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